AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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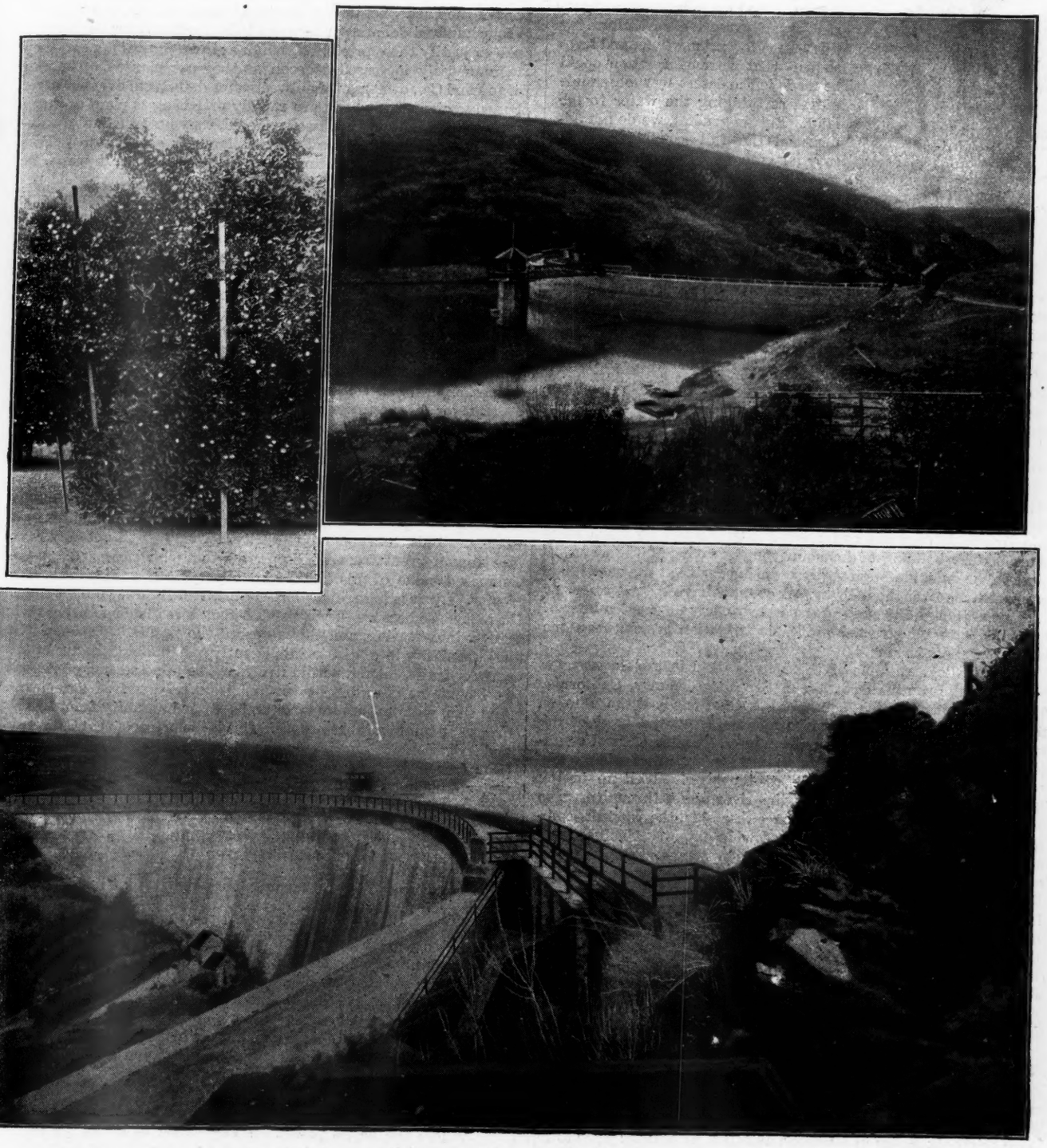

VIEWS OF IRRIGATION WORKS IN CALIFORNIA.

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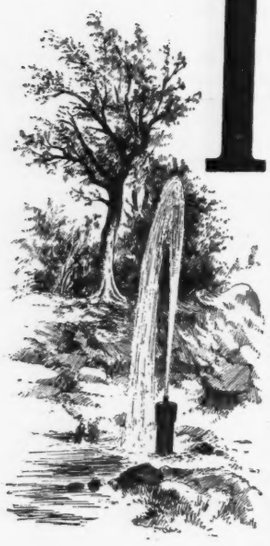
IRRIGATION IN CALIFORNIA.

JAMES K. REEVE.



IRRIGATION has been practiced so long in portions of the territory now comprised within the United States, that it can hardly be considered a new development in our agriculture. In New Mexico and Arizona, water ditches or *acequias* have been discovered that are very old, and which were probably built and used by the Aztecs. The Pueblo Indians have carried on an extensive agriculture by this means for a long time, and have shown what a transformation could be made in the desert by such simple means as bringing the water to the land. But, in general, we do not understand the full possibilities that may be wrought by means of irrigation, nor the effect which the wide adoption of the system will have in extending our cultivable area, increasing the value of lands, increasing production, and making the harvest more sure than it can be made by any other means. To see irrigation at its best, we must go to California. There irrigation is most perfectly systematized, the water stored, distributed without waste, precisely measured and applied where and when it is most needed. By storing—by means of dams and reservoirs—the surplus water that falls upon the mountains in the winter, the irrigating capacity of a small stream may be vastly increased. The streams in all mountainous districts are apt to be raging torrents at some seasons, and to show dry beds at others. It is evident that thus there is an immense waste of water, and this is especially unfortunate, as the dry beds often come at just the time that the crops most need irrigating. The old method of tapping the streams and drawing the water off by open canals wherever and whenever wanted, had this drawback, that the water was sometimes missing when most needed. The building of dams and the conveying of the water by pipes to the land, although vastly more expensive at the outset, is a great advance over the old way. A country having good reservoir sites, even though the streams apparently carry no great volume of water, is better adopted to a profitable irrigation system than one which has good streams, but no reservoirs.

An excellent example of this may be seen in the Sweetwater Valley, in the southern portion of San Diego county, California. The yearly rainfall is ten inches, or less than one-half the amount necessary. But in the Tuyamaca mountains, at the head of the valley, heavy rains fall during the winter. Under natural conditions the river would discharge these in a torrent, during a few weeks, and run dry the balance of the year. Well up in the valley, above the cultivable lands, the river passes through a deep and narrow gorge. Above this, on either side, the foothills combine to make a natural reservoir of wide extent. This has been seized upon as the place for storing the waters, and this has been accomplished by building a huge dam across the upper mouth of the cañon. The dam is of solid granite and Portland cement, and is forty-six feet thick at the base, and twelve feet at the top. It is ninety feet high at bed rock, and is seventy-six feet long at the base, and 396 feet at the top. The reservoir covers 700 acres, and has the enormous storage capacity of 6,000,000,000 gallons. These figures convey but a slight idea of the immensity of the work. Coming upon it after a sharp climb from the roadway below, the only work of human hands in sight, the dry gorge below from which the waters have been stopped, the great silver lake above flanked by the receding mountains, it is impressive not only from its magnitude, but as emphasizing the faith that its builders have in the whole outcome of irrigation.

The water is discharged from the reservoir by means of a main pipe thirty-six inches in diameter, and then by smaller pipes to the different portions of the tract that is irrigated. By this system irrigation becomes possible not only upon lowlands and level fields, but upon upland and hillside. Much of the land under this system is high and rolling, but the head is sufficient to carry the water to the highest portions; and the orange and lemon groves planted on the hills make a most pleasing feature of the landscape, to one accustomed to the unbroken levels of the Florida groves. This dam gathers the rainfall from 186 square miles—the watershed of the Cuyamaca mountains, and the capacity of the reservoir is sufficient to hold a two-years' supply for the irrigation of 10,000 acres.

What such an irrigation system will do in the mere matter of increasing land values, is a point that is worth noting. Without water this land has little value. It is possible to grow some grain, barley for hay, etc., but without artificial aid in the way of applying moisture, there would never be an extended or profitable agricultural or horticultural development of this section. But with the water assured, the land at once springs into a value that is not approached by the oldest, richest and most densely populated sections of the East. Yet buyers are found for it at from two hundred to four hundred dollars per acre, and the results under cultivation seem to justify these prices. Yet high as these figures appear, they are immensely increased as soon as they are planted. The San Diego Land Co., owners of the Sweetwater dam, have over 500 acres planted to citrus fruits, and are rapidly preparing to plant as much more. When the trees are two years old, they hold them at a valuation of seven hundred and fifty dollars per acre, and at three years of age increase this to one thousand dollars. It would be futile to figure the possibilities, in the way of the money yield per acre, to the fruit grower here. Much has been written upon this subject that was misleading. Like everything else, some men succeed at it, while others lose. But this can be said truthfully, that among those who do succeed, profits are realized that would never be possible in ordinary agriculture. The most profitable fruits are the orange and the lemon. With proper handling and knowledge of the methods of curing so as to bring them into market at the season when prices rule highest, lemons are the most profitable of all. In point of profit, the various fruits rank in about the following relative order: Lemons, oranges, apricots, peaches, olives, grapes, apples, guavas, and small fruits.

But for the man of small capital who comes here to engage in fruit culture, there is another point to be considered, and that is the relative time which each require to come into profitable bearing. This may be stated about as follows: Small fruits, guavas, peaches, apricots, lemons, grapes, oranges, olives, apples. The principal profit to be secured in fruit culture is that which will be made by the man of small capital planting his own grove and doing his own work until his trees come to maturity. Then he will not only have the annual profit from his crops, but that which comes from the increased value of his lands—this latter being no inconsiderable factor. Labor is high, and probably many of those who have failed have done so because they depended upon hired labor to bring their groves into bearing, and this absorbed the profits. The man who has the ability to cultivate intelligently and judiciously five or ten acres of fruits, should, within five years, be in possession of as good an income as is ordinarily secured from an hundred acre farm. And this, with less severe labor and greater immunity from loss by drouth and unfavorable seasons. This is the prospect that California and irrigation are offering to the new generation of home-seekers. [Our frontispiece, engraved after photographs, shows the Sweetwater dam and gorge. Above is an upper view of the dam and storage reservoirs. At the left are some irrigated orange trees.]

MODERN HAY-MAKING.

H. C. WALLACE, IOWA.

On our large Western farms, where the hay harvest continues for any considerable length of time, the four-foot mower has been replaced by one with a six or a seven foot cutter bar. The eight-foot rake has given way to one of twice the width. Other implements have been added. Clover grows in such luxuriance in the fertile Iowa soil that the tedder is indispensable. The loader saves time and hard labor. Stacking in the open air has proved to be a very costly method of preserving hay, and our prairies are becoming thickly dotted with hay barns, into which the hay is placed by horse power. Brain has supplanted brawn in a great measure, and haying may now be justly considered an art. By utilizing the improved machinery, and following improved methods, one man can now do the work that formerly required two men.

Where the hay is placed on the wagon by a hay loader, and taken off with a fork or sling, a good working crew for a large farm consists of four men, and two boys ten to fourteen years old. With the wide-cut mower, it is not necessary to begin cutting before four o'clock in the afternoon. This is easier for the horses, more comfortable to the man who drives them, and much better for the hay

if it contains much clover. Enough can be cut between four and eight o'clock to keep ahead of the wagons until the next afternoon. One man does the mowing and tedding, and what little raking there is to do, and still has time to help considerably in mowing away the hay in the barn. The boys drive the wagons. Two men stay in the field and do the loading, and one stays at the barn to manage the horse fork and keep the hay mowed back. Three teams and one good horse are necessary, the latter being used at the barn for unloading. When the boy comes in with a load, he leads the horse, which is attached to the fork, taking the load off his wagon while the other one is being loaded in the fields. The time consumed in loading is a little more than that for unloading, and this allows the man at the barn to scatter the hay in the mow. Whether he can keep up this end of the work depends on the distance to haul and the amount of hay in the barn.

Hay is made very rapidly and very cheaply in this way. With the force mentioned, there is very little time lost. Everything runs smoothly, and little energy is wasted. The hay is put in the barn at the rate of fifteen to twenty tons per day, and at a cost of forty-five to sixty cents per ton, varying, of course, with the weather. On the farms of the Atlantic and Central States this tedder, loader and horse fork are coming into increasing favor, but the average farmers of those regions manage the work with two, or at most three, horses and two men. The tedder and the loader not only save time and money, but the hay is secured in much better condition. The tedder shakes the grass, and gives the air a chance to circulate through it, and dry it evenly and quickly, without burning. The loader follows, and takes the hay out of the swath, hence the leaves are not shaken off, as when it is raked.

Hay barns are becoming deservedly popular. No buildings on the farm so quickly repay the money invested. A good hay barn, holding fifty tons of hay, can be erected for one hundred to one hundred and twenty-five dollars, and not infrequently enough is saved by its use in one year to entirely cover the cost. The saving occurs in three ways. First, the time and labor saved during the harvest season, to say nothing of the advantage of putting every load under a roof, and having no open stacks to be caught by sudden showers. Second, the elimination of the large waste on top and sides that follows stacking. There is practically no waste whatever with the hay barn. Third, the saving of labor in feeding the hay during the winter. This last is a considerable item, for it often means the board and wages of one man during the winter months. By putting a plain, strong manger or rack around the barn, one man can do the work of two working in the old way.

LAMBS FOR MUTTON.

HENRY STEWART.

When a lamb is two weeks old it may be taught to eat a little dry food, by means of the hand. A mixture of clean, heavy oats, corn, and linseed in equal parts, finely ground together, and slightly salted and sweetened with sugar, will be taken eagerly, and will help the growth very much. At the same time it is advisable to nourish the lambs through the ewes, by liberal feeding of grain, of which a mixture of rye and buckwheat coarsely chopped together will be found better than corn, and if anything else is added it should be bran. This will increase the milk in quantity and quality and so help the lambs. By and by the lambs will take their meal themselves if the proper facilities are afforded by means of a small pen with creeps attached to it, and set in the fence. These creeps consist of openings in the fence just large enough for the lambs to creep through; and to prevent tearing of the wool the sides of the openings are guarded by rollers fitted into a sliding bar placed in the fence, by which the rollers may be drawn nearer to each other or widened as may be necessary to fit the lambs. The food is placed in these pens, and the lambs soon learn to creep through to get the meal. These hints are especially useful for the feeding of market lambs, which need to be forced as much as possible to make a rapid growth and lay on fat.

The fattest lambs are a cross of Merino with Southdown. They are not the largest, but the plumpest and heaviest for their size, of all early lambs, and the black faces and legs of the sire render them dear to the heart of a butcher, who will readily give more for such lambs than for larger white faced ones. He points to these black marks with pride, and calls the special attention of his customer to them as proofs of their Southdown lineage, "the finest mutton sheep in the world," as he tells his exacting purchaser. The Merino, however, has something to do with the fatness and tenderness of these lambs, and its early fleece gives the appearance of fullness and roundness to the plump little carcass.

Those lamb breeders who keep the Dorsets for their twin lambs which come quite early, will do well to use the Southdown for the sires of the lambs. This is the rule in England where the Dorsets are kept especially for Christmas lambs. There the ewes of this breed lamb twice in the year, and one is a cross of the Southdown, and the other is pure bred; the former for the market, and the latter for the flock. The Dorset, however, must have the most skill ful attention, and the shepherd who thinks sheep are able to take care of themselves through winter as well as summer, will be very much disappointed if he tries the Dorset to experiment with in this direction. The Christmas lamb is like the Christmas strawberry, a hothouse creation, and those breeders who do not understand this method of forcing lambs, will do well to get lambs later and at less cost, and yet make quite as much profit out of them. It is quite possible to average eight to ten dollars for a lamb in March and April, or even in May, and this with the Merino-Southdown cross.

Many sheep breeders are asking whether the Rambouillet merino yields good mutton. It does, and has for many years, and there is no reason why it should not. Merino mutton has been objected to on account of an alleged wooly taste in the flesh. This is liable to happen with all kinds of mutton, and may be due to several causes. It is not the taste of the wool at all, but of the sheep. This animal, allied to the goat, has a somewhat strong odor which is quite perceptible in a close unventilated sheep pen, and is thus thought to be the odor of the wool, but on the contrary the odor of the wool comes from the sheep. If in dressing the carcass, the opening and airing of it is delayed and it is cooled too rapidly so as to confine the odor, and the gases from the intestines are permitted to penetrate the meat, this will have the sheepy flavor but it is not the taste of the wool at all. Doubtless the very oily Merino may have a stronger natural odor than the less greasy mutton breeds, so-called, but if it is well dressed the flesh is just as sweet flavored.

PROFIT IN PORK.

J. S. WOODWARD, NEW YORK.

With pork at its present price, almost any man can feed his corn, or other grain, to pigs and make a satisfactory profit. But times will change; pork will again go down until it will be so low that the very best skill will be required to get any profit out of its growth. If it be wise, now in the midst of almost universal peace, for the nations to spend such vast sums as they do, in preparing for war, how much wiser for the farmer during this time of prosperity in pig growing to study the subject so as to be prepared when the evil days of low prices come again. It is surprising to see how little thought the average pig grower gives to the matter of cheap production of pork. Although there is some change in the direction of killing lighter pigs, yet the great bulk of the pork still coming into the markets is in heavy carcasses which were fed mostly on corn. Now this is neither the most desirable, nor is it by any means the most profitable pork.

On a recent visit to the Wisconsin Experiment Station at Madison, Prof. W. A. Henry, who is a born experimenter, showed me some experiments now being made, and the unpublished results of some already made on the same line of pig feeding for most profit. If the farmers could see what I saw, and realize fully the great importance of the principles that control animal life, and then follow them, they would save very much of what is now ignorantly thrown away, and would more than double the profits of pork making, by reducing to its lowest limit the amount of food now used as a maintenance ration or simply food for support.

The Professor has demonstrated, beyond doubt, by a series of careful experiments, that the maintenance ration is in equal proportion to live weight, or nearly so; that while a 100-pound pig requires one and one-half pounds of food (one pound of wheat middlings and two pounds of corn meal), simply to keep it without gain or loss, a 500-pound pig, under like conditions, requires five pounds of the same food for its support. He further showed that about three pounds of this same food in addition to either ration, made one pound of pork.

Now, were a man to try to make pork with these pigs, with the one he would get one pound for each four and one-half pounds fed; with the other he would feed eight pounds. For comparison, suppose the mixture worth $20 per ton, or one cent per pound in the case of 100-pound pigs, his pork would cost four and one-half cents per pound; in the case of a 500-pound pig, it would cost eight.

Or, to put it in another light, suppose ten pigs be fed four and one-half pounds of feed each, or forty-five pounds in the aggregate, they will give a gain of ten pounds of pork. In other words, with these pigs forty-five pounds of feed will give ten pounds of pork. Now, if the same food be given to pigs weighing 500 pounds each, it will feed just nine of them five pounds each, but as with pigs of this size it takes five pounds as the food of support, no gain would be made. The food would be simply thrown away, so far as fattening purposes go. If these nine larger pigs be fed to make one pound of gain each, it would require twenty-seven pounds extra. This added to the forty-five pounds, maintenance ration, makes seventy-two pounds of feed to make nine pounds of pork. It will be seen that these experiments of Professor Henry show that the maintenance ration, while not exactly in proportion to the live weight, is approximately so. They show that while it took one and one-half pounds to support the growing 100-pound pig, that one pound per hundred pounds was sufficient with the 500-pound pig. This is easily accounted for by the fact that there is less proportionate amount of exterior surface in the larger pig, no growth, and probably less activity. But carrying this proportion in the direction of a pig still smaller than 100 pounds, it would probably require with a pig weighing twenty-five pounds at the rate of two pounds per 100 pounds, or about one-half pound of food as a maintenance ration. If this be true, it would then only take three and one-half pounds with this pig to grow one pound of pork.

Further experiments by Professor Henry show very conclusively that corn or corn meal is, by no means, the best food for pork growing, though good for fattening. Wheat middlings he found much better than corn alone. He also found, by careful experiments, several times repeated, that 200 pounds of corn meal and 1,582 pounds of skim milk produced as much growth as 500 pounds of the middlings meal mixture and a better growth than 500 pounds of clean corn meal. In this we see that five pounds of skim milk are about equal to one pound of meal. The lesson for the pig feeder in these experiments is to feed young, thrifty pigs, and to feed them on a mixture of corn meal and wheat middlings, and never to feed them beyond 150 pounds dressed weight.

CONCERNING CREAM AND BUTTER.

MRS. S. E. WILCOX, OHIO.

It has generally been believed that milk, to yield cream most perfectly in cold weather, must be kept in a warm atmosphere. Some experiments that I have made during the last winter would appear to disprove this. These few suggestions, regarding cream and butter, are not given for those who have large dairies, with separators, creameries, and other modern appliances, but for the average farmer who has only a few cows, and for the farmer's wife, who, with common and not altogether modern appliances, aims to make the most of the milk and butter. City people rely largely upon fancy dairy or creamery butter. But there is a large population in small villages who depend upon the local farmers for their supply, and are willing to pay a good price for a prime article.

During last winter I have kept milk at as low a temperature as possible above freezing, not only away from a fire heat, but, except in the very coldest weather, the window of the room in which it has stood for thirty-six hours before being skimmed, was open night and day. It has been a matter of surprise how well the milk, under these conditions, withstood frost. Only a few times has it been necessary to introduce heat to prevent freezing. I think I have never gathered as much cream from the same quantity of milk under other circumstances. The "gude man" affirms that "the cows are the same as formerly, and have not received as good rations as usual." Directly after the milk was skimmed it was emptied from the pans into a large vessel and placed in a warm room, quoting from the "gude man" again, "it was turned over and skimmed on the other side," and in twelve hours yielded a supply of cream for coffee, soups, and gravies. Many affirm that this second rising is counterfeit cream, and will not churn into butter, but I can testify that it is a very acceptable article for the cook. Doubtless many writers on dairy matters will say these experiments were very superficial, and their results unreliable and of little practical value, but make a note of them, my rural sisters, for future experiments and satisfy yourselves regarding them.

Into the first skimming of cream put half a teacupful of salt and a heaping teaspoonful of pulverized saltpeter to every gallon of cream when churned. Salt causes cream to yield butter more readily and retards acidity. This quantity will not make the buttermilk too salt for culinary purposes. Saltpeter tends to keep the cream from becoming bitter in winter, and gives butter a firmer texture in the summer. It also acts as a preservative in the butter. I find some excellent butter makers are putting white sugar in butter; some use half as much sugar as salt. I use one-third. The presence of sugar increases the preservative quality of salt and imparts a pleasant flavor. Few people on small farms have ice, but nearly all have plenty of cold water. With neither ice nor cold water good butter cannot be made in warm weather. Put a strong bail on an old-fashioned stone churn and keep the cream in it. In hot weather put the jar into the well twelve hours before churning. This is also a good place to cool butter. Most wells can be arranged to make this practicable. If this jar is used for a churn, it saves time and labor in handling the cream, and is easily kept sweet. It is claimed that granular butter cannot be made in a dash churn, yet an article can be made for which local consumers will gladly pay more than the market price.

SUMMER CARE OF YOUNG FRUIT TREES.

WEBB DONNELL.

The first season after the young fruit tree has been transplanted from the nursery to its permanent home in the orchard is a critical period in its existence, and it is hardly too much to say that, on its growth during this period, depends, in a great measure, the future value of the tree. If it receives a check at this point in its career its full possible perfection will probably never be realized. Of course much of the first season's success or failure depends upon the care or carelessness with which the transplanting has been done in the spring, but still the summer care will have much to do in helping the tree through the first season.

The greatest danger the tree will encounter is the scalding effect of midsummer heat, and the weakening of its vitality by a drying of the earth about the roots. The first difficulty will be at least partially obviated, and the latter almost wholly, by taking care that the earth is made firm about the roots when the tree is transplanted, and kept thoroughly well mulched. The mulching should be spread on thickly and as far out from the trunk of the tree as the roots run, and if carried considerably farther it will be all the better, as the moist condition of the soil beyond the extremities of the roots will induce root growth.

Another care of summer is to be on the lookout for the eggs of the apple tree borer that may be deposited upon the trunk, from which eggs, if not destroyed, will come a brood of larvæ capable of inflicting irreparable damage upon the tree. Another important summer care is the cutting off at once of all branches that are not desirable for the growing tree to possess, as in this way much strength can be saved to be expended in growth, where growth is desired. Care at all points throughout the season is amply repaid by the orchard in after years.

BEET SUGAR FARMING.

CHARLES RIEDEL, NEBRASKA.

The sugar beets I raised last year were shipped in freight cars to the Grand Island factory. One acre of land was prepared by plowing eight inches deep and subsoiling so to have eleven to thirteen inches of loose soil. It was then harrowed and smoothed with a plank clod crusher. The seed was sown with a Planet Junior seed drill, twenty pounds to the acre, though twenty-four pounds are better, in rows eighteen inches apart. The field ought to be nearly square, so the double wheel hoe can be used both ways, when the thinning out is done, which is the biggest and most important part of the work. The rest of the cultivation can be done by a one-horse cultivator. By running the double wheel hoe on both sides of the row, with the curved parts inside, only a strip one inch wide is left for hand thinning and weeding. With four-inch hoes, repeat the operation a few days later at right angles to the rows, and only little squares of one square inch are left to be thinned out and weeded, which reduces the much feared hand labor to a minimum. The rest of the cultivation was all done by the wheel hoe, with the cultivator teeth inserted in place of the hoes. For cultivating the sugar beets I raise for stock, I use a two-horse corn cultivator as the rows are planted three feet apart, and thinned out from ten to twelve inches in the row. Sugar beets are the most profitable crop for me to raise, for they sell well, are well liked by all domestic animals, and are superior for table use, to all other beets.

THE OLD WORLD PHEASANTS.

The pheasant is a wild game bird of Asia, which, on account of its beauty, has been introduced throughout Europe, into the many artificially stocked hunting grounds. It runs with great speed, trusting its legs rather than its wings, and is a ground-loving bird, being found among long grass and tangled underbrush. When frightened, it steals silently away until out of sight, when it escapes by swiftly running to a safe distance. The pheasant is one of the most beautiful birds found in temperate climates. It attains a weight of about three pounds, and its delicate flesh is so fine flavored that it is considered a great luxury. Pheasants often nest in clover fields, gathering a rude heap of grass and leaves upon the ground, with a depression just deep enough to hold the eggs. There are about a dozen eggs of a uniform olive-brown color, with very smooth shells. They are hatched in about four weeks. The old ones and their broods, if not disturbed, remain in the stubble and hedgerows of grain fields for some time after harvest. Otherwise they frequent the woods, coming out to feed in the evening and early in the morning. They can live, however, on wild berries, acorns, and insect food. When the cold weather comes on they begin to roost in oak trees, and when all the leaves have fallen they almost all fly up to this roost at sunset, the females whistling while doing so, and the males making a deeper sound. A wet shrubby ground near the sea or lake shore, or a marsh covered with underbrush make a good pheasant cover. Here they may be rapidly propagated, if kept perfectly free from intrusion or noise, and abundantly fed with field peas in troughs. As the tame hen-pheasant does not incubate well nor lead her young to food, the eggs are hatched by common hens, the bantams being particularly good for this purpose. The hen-pheasant and the brood are then kept in a coop with a yard covered with wire cloth. The young require meat daily. The first food given to the chicks is soaked bread and white of eggs cut up fine. Ants' eggs are fed to them, and boiled barley, or rice, oatmeal, cornmeal, and cooked meat. Saucers of clean water are placed about. The chicks soon quit the hens to roost in the shrubs, but are not so likely to stray away as those more naturally reared. Our illustration shows a Lady Amherst pheasant flying, and a Golden pheasant in the foreground.

LADY AMHERST AND GOLDEN PHEASANT.

The Comb as a Guide to the Condition of a Fowl.—The comb of the fowl is a fair index of its condition. It is its health barometer. When the comb is a bright red and filled with blood, we know the fowl is well. When it becomes pale and looks whitish, we know the fowl is out of condition. If it turns dark at the end, we may be sure that something is the matter with the fowl, and the trouble will generally be found connected with the respiratory organs; if the fowl is choking with food, or the trachea is filling with canker, the comb will be black. A bright red comb, also, is the indication of a laying condition already attained or soon to be reached. When the hens go singing about with bright red combs we may soon expect eggs. We have, then, a ready guide to the condition of the fowls in the comb. When we go among our flocks we can easily pick out the well from the ill ones, those that are laying, or soon to lay, from those that have no present intention of so doing, by simply glancing at the combs. The value of such a guide, so simple, so easy to be understood, cannot well be overestimated.

ON BROODINESS.

H. S. BABCOCK.

No broody hens wanted this month. But here they are, and as they sit on the nest their air seems to say "We have come to stay." So long as they are allowed to have their way, the egg product may be expected to assume a vanishing form. They should be broken up at once,—changed from setters into layers. Some people seem to study how not to do it, when they wish to break up a broody hen. They pile stones into her nests, but such things move her not—she is willing to try to hatch out a quarry. They half drown her by repeated duckings, but after the involuntary bath, she shakes her wet plumage and goes to her nest at once. Cruelty is unnecessary and ineffective. Fortunately, there are several good and harmless ways. The very best method, because of its effectiveness and simplicity, is to provide a room without nests—any plain room with roosts to perch on—and put the broody hen therein. Give her, as a companion, an active, vigorous cockerel. Feed and water generously, adapting the feeding to the production of eggs. A week will generally suffice to break up the most persistent sitter, with no special trouble. Sometimes three days will have the desired effect. Another effective plan is to build a good sized coop, say two by four feet, having a false bottom of laths, raised about three inches from the floor, and so placed that each lath is about two inches from its fellow. This coop will cause the hen to think she is continually roosting, and will soon dispel the wish to sit from her mind. Feed and water as if she had never been broody. Still another good and effective plan is to use a common A-shaped coop made of lath, under which place the hen in the poultry run, in full view of the rest of the flock. The male bird will spend some time about this coop, trying to direct the attention of the confined hen from her desire to sit. This will do in pleasant weather, but humanity would compel the disuse of such a coop in wet weather. Pieces of ice in the nest are very discouraging. Another plan, said to be effective, is to tie the hen by a cord to a stake. This will forcibly keep her from the nest, and is not necessarily a cruel method. Care can be taken to prevent the cord from chafing the leg.

But whatever method may be adopted, the efficiency of it will be greatly increased by promptness in its application. Any hen found on the nest at night, when the poultryman is on his final round before retiring, should be promptly removed, and placed where the breaking up process is to begin. If she is allowed to remain on the nest a day or two, it will take more time to break her up. Hens will often begin to sit before they are fully through laying their litter of eggs. It will be advisable, therefore, to examine the place of their confinement several times daily and remove such eggs as may be laid. If the eggs are allowed to remain for any length of time, the hen will have the broody desire strengthened. Much can be done, by proper feeding to delay the time when a hen would naturally desire to sit. By supplying more of the nitrogeneous, and less of the carbonaceous elements in her food, by feeding for eggs rather than fat, by keeping up the production of eggs, the hens will be less likely to become broody. A hen that is permitted to become very fat, has fed to her fat-producing foods, will lay a smaller litter of eggs, and sooner become broody than one that is properly fed for laying. A good layer is usually well nourished, but not made overfat,—she is generously fed, but not on fat-producing foods.

Some have gone so far as to affirm that sitting is simply nature's plan to get rid of superfluous fat, and that a broody hen is, therefore, an over-fat hen. While there is some connection between fatness and broodiness—the connection that arises from the method of feeding—one does not stand to the other in the direct connection of cause and effect. All fat hens are not broody hens, and some lean hens are persistent sitters. A broody hen is one which has laid out her litter of eggs—be it large or small, and the size of the litter is to some extent dependent upon the food—and is exercising the natural instinct of reproduction. If fatness were the direct

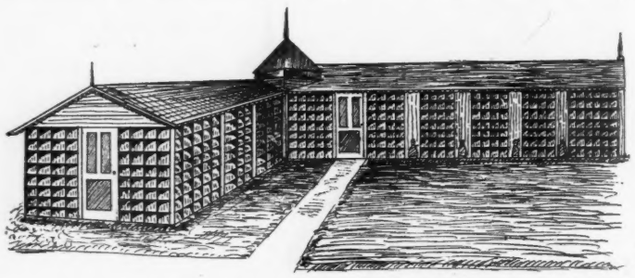


FIG. 1. PERSPECTIVE VIEW OF POULTRY HOUSE.

cause of broodiness, then every fat hen should desire to sit, and no lean hen would have any such inclination. But there are many fat hens which show no inclination to sit, and many lean hens which are very persistent in their efforts to raise a brood of chickens. If sitting were nature's plan to get rid of superfluous fat, then a fat hen, which had set for several weeks and reduced her flesh, should at once become free from the desire to incubate. But this is often not the case. And then, too, some hens actually increase in weight while sitting. Such cases have been often observed, even when the hens sat for six or nine weeks. The general rule, however, is that a hen loses flesh while sitting, sometimes in a very marked degree. The facts do not warrant the theory that fatness is a direct cause of broodiness, though it may be an indirect cause in hastening it.

If what has been said upon the relation of fatness and broodiness be true, the person desiring to avoid broodiness has a partial remedy in his hand by so feeding as to avoid undue fatness and lengthen the period of laying; while the person who wishes to secure broody hens has, also, placed within his reach the means of assisting in this result. If, for example, early sitters are desired, the correct method to employ would be first to so feed the hens as to induce generous laying, and then gradually change the character of the food from egg-producing to fat-producing material and hasten the fattening of these laying fowls—shorten their litter of eggs so that the broody instinct would more quickly become active. A little management will frequently help out matters a great deal.

FARM POULTRY BUILDINGS.

J. W. CAUGHEY, PENN.

Many farmers would prefer tastefully constructed buildings for poultry, had they the means to afford them. A neat structure oftentimes costs considerable money to make it what one desires it should be. A farmer of my acquaintance owns a very choice flock of Golden Wyandottes, and last season he erected a comfortable house for his flock at an expenditure of $250. He had saved the money from the sale of eggs and dressed poultry; being a truck farmer, he marketed his truck at his stand in the market, and always managed to have his basket of eggs and dressed poultry ready each day he went to town. He said he found that his flock paid him a better percentage of profit than anything he had tried before, and he had enough pride to feel that a paying flock of hens deserved a good house, and he invested the earnings of one season in a properly equipped building.

The building illustrated (Fig. 1) is arranged to afford accommodations for from 250 to 300 hens. The side exposure on the south,

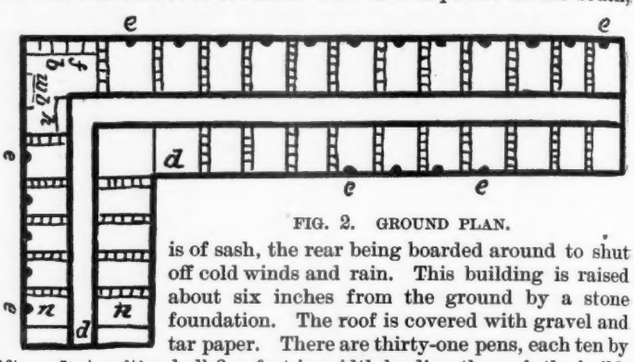


FIG. 2. GROUND PLAN.

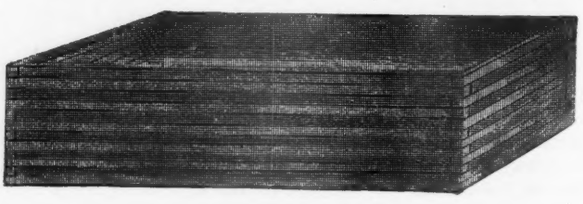
is of sash, the rear being boarded around to shut off cold winds and rain. This building is raised about six inches from the ground by a stone foundation. The roof is covered with gravel and tar paper. There are thirty-one pens, each ten by fifteen feet, with a hall five feet in width leading through the building. Each pen should properly accommodate from eight to twelve birds. This building is 325 feet long, the main wing being 175 feet, and the other wing 150 feet long, the larger part being given up exclusively to layers, the other wing to sitting hens and incubators. A few of the pens are set apart for sick fowls, and others are kept for odd cockerels when they accumulate too rapidly for the capacity of the pens.

The ground plan (Fig. 2) shows the location of the pens, and all the doors, *d*, entering the building and those entering each pen. The door leading from the right wing enters a small room leading to the passage way or hall. Turning to the left and walking a short distance past several pens, one comes to the feed, cook and tinkering room, where are the heater, work bench, feed bins and closets. Here everything is made ready for each meal. The room is thirty by thirty-five feet and ten feet high. The cupola is simply an ornament on the corner over this room, and can be put on or omitted at the option of the builder. A tier of nests, *n*, is located in each pen, being fastened to one another by hooks, allowing the breeder to unfasten them when it is desired to clean up and change them at any time. A board is placed at each entrance, *e*, and is raised or lowered by pulleys and cord extending out into the hallway opposite each pen. This is a great convenience, as the fowls can be shut in easily without going into the pen to do so. The food bins, *f. b.*, the work bench, *w. b.*, and the stove, *h*, used for heating the food and keeping a proper temperature in the pipes, through which hot air is continually passing, are in the storage room. The pipe heating is done only in extreme cold weather, when hens refuse to do anything but eat and sleep.

BOX FOR STORING BACON.

NAMUD CAHILL, VIRGINIA.

If the smoke house is very dark and close so that flies or bugs will not be tempted or can get in, all that is necessary is to have



SECURE BOX FOR SMOKED MEAT.

the meat hanging on the pegs; but, if not, even when the meat is bagged there is still some risk of worms. The meat, of course, touches the sides of the bags, and I have seen the black bugs that lay eggs and make skippers, and the flies that lay eggs which hatch into maggots, on the sides of the bags of meat, and later on found some skippers in my hams, where the meat touched the bag. To make a box that will be bug-proof, rat-proof, and at the same time cool, as seen in the illustration, make a frame of one-inch

thick, and two or three inch wide, plank with a close plank bottom; cover the whole box with wire cloth, such as is used for screens. Let the wire cloth be on the outside, so that the meat will not touch it. The top may be of plank and fit perfectly tight, so that no insect can creep under. Of course the box may be made of any size desired. It will be well to have the strips nailed quite closely together, say about one and a half inches apart. When the meat is put in, lay sticks between, so that the pieces will not touch. If the box is made carefully, it is absolutely bug-proof and rat-proof, affording ventilation at the same time, and so preventing molding. Meat should be kept in a dry and cool place.

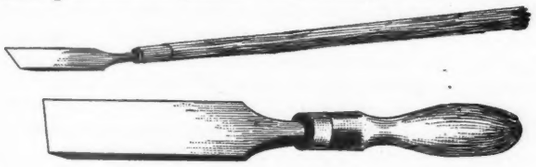
A SHELTER FOR THE HAYRACK.

One of the most cumbersome implements on the farm is the hayrack or rigging, which takes up so much room that most farmers leave it out of doors when not in use. A good hayrack is worth at least ten dollars, and leaving it exposed to the weather throughout the year, renders it liable to give out in some vital part in five or six years, and the failure is apt to occur in a time of greatest need. A convenient place for the hayrack is in the barn loft. To hoist it near the roof two pulleys are used at each end. The position is shown in the illustration. The rack is raised directly from the wagon by one man, who pulls up each end a few feet at a time, and winding the lower end of the rope about a strong pin at *a*. It can be raised entirely out of the way of the threshing machine, or other farm implements, and when it is to be used one man can easily lower it upon the wagon.

HAYRACK IN BARN.

THE CHISEL WEEDER.

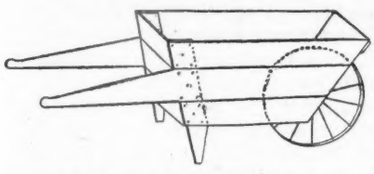
In times of drouth, it is often difficult to remove large weeds from among the rows of plants. An ordinary two-inch wood chisel, kept well sharpened, is one of the most efficient instruments for this purpose, as the keen edge and the weight of the chisel will cut through the most fibrous weed. With a short handled chisel, one must kneel or bend over, and the resulting backaches are far from satisfactory. The accompanying illustration from a sketch by J. L. Townshend of Utah, shows how such a weeding chisel can be inserted in a long hoe or fork handle, and it is then feasible to stand up while fighting the weeds, which often grow faster than one man can pull them by hand. Narrow hand hoes, or the tomahawk or arrow head hoes may do good service, but they cannot compete with a long handled weeding chisel in the hands of a vigorous gardener. The chisel is especially adapted to the weeding of sugar beets and other root crops in weedy or dried-out soil.



WEEDING CHISELS.

A SERVICEABLE FARM WHEELBARROW.

A strong wheelbarrow is shown in the illustration from a sketch by G. W. Rice of Illinois. It can be made of any size. The one sketched has a large box, four feet long on top, two feet six inches wide and eighteen inches deep, and is made of six-inch pine fencing. The wheel is set into the box, as shown in the sketch, the axle being stapled directly to the lower front edge of the box. A hood, made of boards with sheet iron top, is placed over the wheel inside the box. The wheel is two feet high. The legs are ten inches long below the box, and form the frame of the box. The handles are two feet long, and the same boards may be made to project forward far enough to hold the axle of the wheel, if one does not want the wheel to set into the box. This barrow is light and strong, and will carry heavy loads of farm materials when it is not convenient to use a horse.



HOMEMADE WHEELBARROW.

A CONVENIENT BARN.

D. WORCESTER.

In the accompanying illustrations are given the elevation and the interior arrangement of a farm barn that probably gives the most room for the money of any that could be devised. Its square construction and flat roofs permit all the hay and fodder to be placed above the first floor, thus leaving this entire floor free for the quartering of stock, while the cellar below can be utilized for the storing of roots, which should form no inconsiderable part of the feed consumed by the stock, and for the storage of the manure, the root cellar being, of course, separated from the manure pit by a tight wall. A perspective view of the barn is shown in Fig. 1.

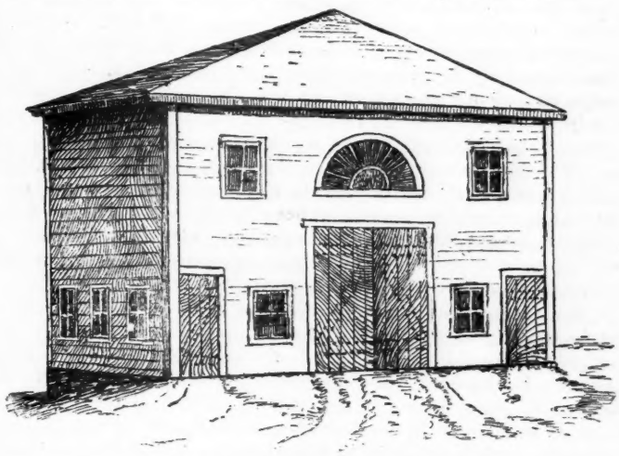


FIG. 1. PERSPECTIVE VIEW OF BARN.

Such a barn is excellently adapted for the keeping of sheep, three sides of it being devoted to the pens for these, while the feeding of all the sheep can be done from the main floor; or, it can be very well made to serve the purpose of a dairy barn, with a silo in one corner, extending from a cemented floor in the cellar to the hay and fodder floor. When arranged for sheep, the pens can be advantageously arranged, as shown in Fig. 2, each pen having communication with the neighboring pen, and also with the feeding floor. An inside feeding rack may be used, into which hay and other fodder can be pitched directly from the feeding floor, and this, in some respects, is the best plan to pursue, for it permits a tight board fence between the feeding floor and the pens, to a height of three feet or so, thus keeping the lambs from coming through from the pens to the feeding floor and soiling the floor and hay. But if the flocks are fed directly from this floor, let a perpendicular opening be provided for each sheep to feed through, rather than the long horizontal opening provided by the removal of one board from the partition, which is so commonly seen, but which necessitates the wearing off of all the wool above the sheeps' necks, to the loss of the wool and to the sheeps' manifest disfigurement. These upright openings can be made by removing at least two

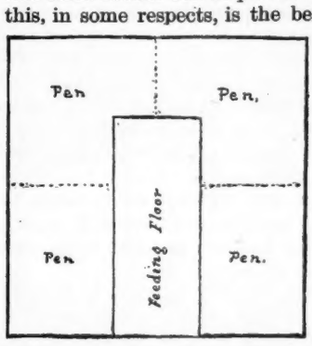


FIG. 2. FLOOR PLAN FOR SHEEP BARN.

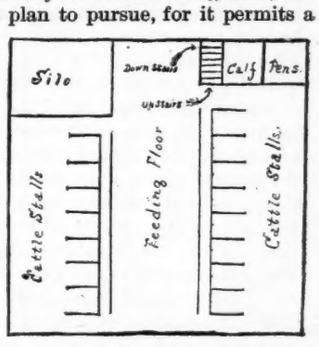


FIG. 3. FLOOR PLAN FOR DAIRY BARN.

boards from the partition, and using slats, or rounds just far enough apart to admit a sheep's head and neck with the greatest comfort. If the barn is to be used for dairy purposes, an interior arrangement, such as is seen in Fig. 3, Page 391, will be found convenient. In either case hay and fodder is placed in the second story by driving the hay carts into the central feeding floor and raising their contents through a central "well," or large opening in the center of the second story floor by means of a hay fork, this well being properly protected by a tight wall around it four feet or more in height. To make it impossible for children to fall through such an opening, even though protected by a high wall, the opening may be covered, when not in use, by a hinged grating.

COWS FOR A CHEESE DAIRY.

S. HENRY.

It is a common experience that almost everything has its special use, for which it is best fitted by its special character. Very few things, or persons either, are fitted for all purposes, and we find in practice that as no two things, or animals, or persons, are precisely alike, so each has its special fitness for some particular use. This is very true of cows, and the general purpose cow that is fit for butter, cheese, or beef, is a creature of the imagination. And while there are persons who think this difference does not apply to cheese and butter cows, yet it is easy to perceive by a little thought that the special butter cow with her very rich milk cannot be profitably used for a cheese dairy.

Except for some kinds of cheese, that are excessively rich in fat, as the English Stilton, for instance, or for pure cream cheese, both of which need special methods of manufacture, it is impossible to retain in the curd under ordinary processes all the fat in the milk above three per cent., and this proportion of fat is the most that can be afforded in the best whole milk cheese, of the standard make, that sells for the highest price. Such a cheese will have three and one-half pounds of casein, three pounds of fat, three pounds of water, and one-half of a pound of mineral matters, sugar, and acid, in the ten pounds made from one hundred pounds of milk. This is precisely the composition of the best Cheddar cheese, and of a full American standard cheese of the present time. Any more fat than this proportion would be thrown away by the maker, who would, if he knew his business, be making butter instead of milk. So that it may be said that any cow that gives us more than three per cent. of fat in her milk is a special cheese cow; and one that gives four or five, or more, per cent. of fat is a special butter cow.

But this is denied by some persons who believe in general purpose cows, and who have accepted that quite mistaken belief that the proportions of the solids in milk do not vary, and the milk of any cow that has an excess of fat in it, will have also an equal excess of other solids. This belief may be easily shown to be unfounded, by the simple statement that if it were true, and one cow gave the proportions above mentioned of the different milk solids, and which would make a milk of good standard quality, having fully thirteen per cent. of total solids in it, another cow giving milk with six per cent. of fat in it, such milk must have the impossible quantity of not less than twenty-six per cent. of total solids. Milk of such a kind would hardly be liquid, having as much solid matter in it as flesh has. Experience has shown the belief to be wholly erroneous. For a whole column of figures might be gathered from the reports of the experiment stations to show that a real butter cow is naturally a butter producer, and that her milk exceeds the average in this respect only, and that, in fact, the milk of such cows in the majority of instances, has actually less other solids than fat when this goes above four per cent.

This is shown in an interesting manner by Prof. C. A. Goessman, of the Massachusetts station. He gives a statement of the composition of the milk of thirty-eight cows, of which four may be taken as a sample of the whole. These four cows' milk contained as follows:

Total Solids. Per Cent.	*Fat.*	*Other Solids.*
14.47	4.30	9.81
15.76	5.95	10.17
15.93	6.40	9.53
16.68	6.75	9.43

The milk of these three cows had actually less solids other than fat, as the fats increased; while the other milk had more in proportion. The whole list of the thirty-eight cows shows, in the large majority of instances, the same thing; and yet we are reading continually that as the fats increase, the other solids increase with them. Truly "truth never can overtake an error" once that gets a start. But thinking dairymen should not be led into the delusion that the best butter cow must necessarily be the best cheese cow, unless the separator is to be used to take out of the milk the excess of fat over three per cent., and this cream saved goes into butter.

CARE OF NEW MILKERS.

JOHN GOULD, OHIO.

The stable care of dairy cows should be of the best at all times, but cows about to calve require special attention. The cow must have more freedom than the usual stable affords, but should not be confined in some out of the way place many degrees colder. The cow is a social animal in her way, and if removed from her place in the stable, and put in a strange place, away beyond sight of the herd, she gets lonesome, uneasy, and often so excited that calving is attended with "bad luck," which is another term to excuse the farmers' lack of comprehension in discerning cow habits. Have the box stall in the end of the stable where the cows habitually stand, and a day or two before calving, put the cow in this stall. She is not now removed from "home"; has the same temperature, her "neighbors" in sight, and calving is likely to be attended with favorable results. After an experience of thirty years I am opposed to restricting the rations of a cow before calving. It is a period in which she needs all her strength and vigor. But with this condition of full strength, she must have her bowels rather loose, as constipation is a condition that should be avoided. But do not resort to salts. Feed some beet roots, or the like, for ten days before calving, and it will secure healthy operation of nature without resort to violent cathartics.

Within an hour or two after calving, milk out about one-half of the contents of the udder, and to it add enough warm water to make a bucket full. Put in a quart of fine middlings, and let the cow drink it. To the cow it means strength, and has a fine laxative effect. The calf is supplied with all the laxative milk it needs. I doubt the alleged benefit of allowing the calf to suck. Tie it to the manger at the cow's head, and allow her to expend all the affection on it she desires. Feed the calf with the fresh drawn milk. In a few days the cow will show very little interest in the calf, if it does not suck, and its removal occasions little trouble.

The cow generally prospers best the next few days if the grain ration fed is very small. When the milk flow begins, and not before, this ration may be gradually increased up to the twelfth day. Heavy grain feeding at the start stimulates the milk flow in advance of the natural yield, and the udder is liable to be inflamed—for the cow, after her trial, is undergoing a certain change of the animal functions—and too high feeding is likely to get the cow off her feed. This once encountered will restrict the after flow of the milk. The feeding of grain when on the pasture is not popular, but I am convinced that it pays, not so much at the day, but in its after influence, in sustaining the full flow of milk, and then makes its benefit more apparent. Either shorts or oat dust is an excellent food.

CAUTION ABOUT WATERING HEATED HORSES.

Thousands of horses are foundered each year by watering after being heated by work or fast driving. Of course this is not done intentionally, but through carelessness. The trouble is caused by introducing cold water into a heated stomach, and is most liable to occur in the warm days of early summer when the atmosphere is warm, but the water is many degrees colder. If a horse must be watered when heated, as along the highway, let him have a swallow or two, then keep him away from the trough for a moment, by which time the little water introduced into the stomach has been raised several degrees, when a half pailful will do but little harm, especially if the journey is to be immediately continued. If a horse has been subjected to a long drive or excessive work before entering to the stable, a swallow of water will prove a great relief to him, lubricating the parched throat and allowing him to eat the dry fodder with some degree of comfort, but he should, when cool, be watered before feeding the ration of grain. If water be warmed enough to take the chill off, it can be given in quite large quantities at any time with but little danger.

Milking in the Stable.—Milk the cows in the stable. It is much better than the old way of outdoor milking. The flies are not so troublesome, and the cows are not running around the yard, causing the milker to follow, two or three times in the course of the operation. Give each cow a little grain, if no more than enough to encourage her to go readily to her place in the clean milking stable.

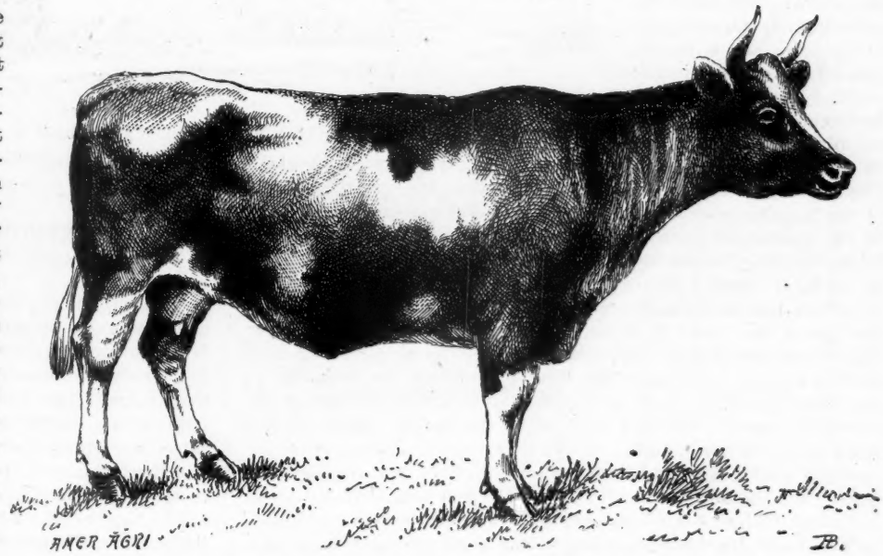
THE MARSH CATTLE OF NORTH GERMANY.

GEO. A. MARTIN.

The northern coasts of Germany along the North Sea and the Baltic were originally composed mainly of shifting sands and fathomless bog. This region, stretching through sixteen degrees of longitude, from the Russian frontier to the Netherlands, is now the home of a numerous, thrifty and prosperous population. The cultivable and pasture lands have been rescued from the dominion of the waters by infinite labor and untiring enterprise in diking and draining. The farms are, as a rule, not large, but owned by the farmers who occupy them. There are wide variations in the character of the soil, the reclaimed marshes consisting of very fertile alluvium, while the Geestlands are almost barren sand. Between the extremes are various grades of sandy and clayey loam.

TYPICAL RED-SPOTTED OLDENBURG BULL.

With the farmers of these marshlands the breeding and care of live stock are leading branches of industry. The strong, useful horses of North Germany are just beginning to be known, to some extent, in this country, but the cattle are never heard of. Yet for dairy purposes they suffer little in comparison with the famous milking herds of the Netherlands. Among these cattle is a great diversity of breeds and varieties, the most numerous being black-and-white descendants of Dutch cattle. This is especially applicable to the Baltic coasts of East and West Prussia, where the race was extensively introduced by Dutch colonists, and has been reinforced by recent importations from Holland. In other parts the schwartzbunt, or black-and-white cattle, differ somewhat from their congeners in the Netherlands, the differentiation being the result of breeding and management. Besides these are the red spotted (rothbunt), brown, gray (schimmel), and a race of a beautiful and peculiar mouse color (fahl). There are also found occasional specimens of the Jersey-like Angeler cattle of Holstein, but these are more common farther south. The leading races, however, are the black-and-white and the red-and-white. Of the former no description is needed by American readers, so nearly are they allied to the so-called Holstein-Friesians which are bred to the highest perfection in this country. The rothbunt, or red-spotted cattle of Breitenburg and Whilstermarsh, bear some resemblance to the well-known Shorthorns, having massive frames, and uniting to good milking qualities ready adaptiveness for fattening. It is only within recent years that their beef-producing qualities have received special attention. The cows are deep milkers, and the steers and oxen attain a weight of 1,500 to 1,700 pounds, the beef being of good quality, nicely marbled, tender and juicy. Although scarcely ever heard of outside of Germany, these Breitenburg and Whilstermarsh cattle have won wide popularity in the Fatherland, where they are invariable prize-takers at the national exhibitions and cattle shows. Within the last two decades great advance has been made throughout North Germany, in the improvement of the various breeds of cattle, and no agency has contributed more largely to this end than the establishment and maintenance of herd-books. These herd-books are not general, like those of Great Britain and the United States, but local. The region embraced within the scope of a herd-book may be a province, as East Prussia, a grand-duchy, or a tract no larger than some of the bonanza farms of North Dakota, as the Weser marsh, or Jeverland. Each book is under the supervision of an editing committee (Körungs-Kommittee,) and the region is divided into limited districts (Körungs-Bezirke), in each of which are two resident inspectors, upon whose report alone can any animal be registered in the herd-book. The inscription includes the name, date of birth, pedigree, color, and markings of the animal, the name, residence, and address of the breeder and owner, as in the British and American herd books. In addition, there must also be the body measurements, viz.: Height at withers, height just in front of the hips, girth, length from point of shoulder to rear of hips, width at point of hips, and breadth at pelvis. It will readily be seen that this system of personal inspection and minute description of each animal, affords safeguards against fraud, either in registration, or subsequent sale. Two of these local books of record are devoted to the red-spotted cattle. One is the Herdbuch für den Viehzucht-Verein für die Holsteinische Elbmarsch, in the native habitat of the breed, and the other, the Ostpreussisches Herdbuch für die Breitenberger und Whilstermarsch Rasse, for the cattle of this race bred in the province of East Prussia. Such subdivision of the work of registration has its local advantages, but in a country so extensive as the United States, it would lead to an infinite multiplicity of herd-books and endless confusion. But where practicable, it makes every entry a pedigree record and accurate description of the animal. [Our illustrations represent a bull and a cow of the red-spotted Oldenburg or Budajingen race of cattle, engraved from photographs.]



TYPICAL RED-SPOTTED OLDENBURG COW.

New Zealand Flax.---But little flax is manufactured in New Zealand. To make its manufacture profitable large capital is needed, and extensive factories are required. The flax is mostly consumed in Europe, where it is made into a great variety of goods. The value of the flax depends on its quality; the finer grades being double the price of the lower fiber. It is dressed, and packed like cotton into bales. The staple has been introduced into the American markets, and is now extensively used by manufacturers in the United States, where its popularity is equal to that in Europe. This fiber plant, *Phormium tenax*, is a native of the antipodes.

THRESHING ON THE PRAIRIES.

JOHN M. STAHL.

Twenty years ago practically all the small grain in the West was stacked; there were few mows, and very little was threshed from the shock. Now a very large part is threshed from the shock, this being the general rule in the most progressive localities. The farmers have for years tried threshing from the shock, and general experience has demonstrated that this is superior to stacking the grain. Grain in stacks is not infrequently damaged. The stack may be improperly built, or it may be wrecked by a storm, or the season may be so wet and warm that before the grain can be threshed some of it will sprout in even a well-built stack; and the difficulty of getting good stackers has constantly increased. On the other hand, some of the reasons for stacking have been removed. When the threshing machines were operated by horse power, and the straw was handled along the stack altogether with forks, it was quite an advantage to put off the threshing until cool weather. But now, with steam engines and straw stackers, the work can be done in July and August without injury to man or beast. Other improvements in threshing machinery besides the automatic stacker have made it possible to do the work so rapidly that it can be got out of the way of the fall seeding. It is easier to put the grain on the thresher's table than on the stack; and all the hard labor of stacking and of pitching the grain from the stack to the thresher's table, is saved. So great is the saving in handling the grain that it is by no means certain that it is not better to thresh from the shock than to mow the sheaves.

To maintain mows as well as to construct them, costs money. The opinion entertained until a few years ago that to have first quality grain it must be allowed to sweat in the stack or mow, has been proved erroneous. Threshing from the shock is prudent and advisable only when the work is done promptly. If it is much delayed, rains may interfere and the grain will sprout in the shock. But the man who intends threshing from the shock should make his arrangements early. Especially should he be careful to engage the machine positively; and he should see that the grain is well bound and well shocked. The farmer cannot afford to undertake the work of one of the regular positions about the threshing machine. The eyes of the master are worth both his hands. On the day of threshing he is certainly worth more to himself in another capacity than as a farm hand. He will profit by hiring one more man, and thus leaving himself free to plan and direct, which will give him more than enough to do. Among his first duties is a very important one that he cannot well avoid—that of assigning each man to a position. Unless the farmer exercises his authority to say where each man shall work, the chances are that some of the strongest men will take for themselves the easiest places, forcing the boys to the hard places. Though the revolving straw carrier is used there is yet hard and disagreeable work to be done on the straw stack; and the farmer should see that the best hands are put there. Boys lack both strength and judgment to stack the straw properly, and at least the strength to do well the work of other hard positions. The watchful eye of the farmer may save a dozen small wastes that, in the aggregate, will be much more than the wages of a man. Very often a considerable part of the chaff is not carried well onto the stack, but is allowed to fall under and about the straw carrier. This chaff is valuable feed, and the wise farmer will throw it on the straw carrier as fast as any considerable quantity fails to be taken on to the stack. For this work a manure fork is the best implement. Sacks and forks are likely to get covered up in the straw and chaff about the machine unless there is a watchful eye upon them. Finally, the hands inclined to shirk will probably be deterred by the knowledge that all such attempts will be detected. The prudent farmer will see that his name is on his sacks and forks before threshing begins. If sacks are borrowed, they should be plainly marked and their number be definitely known. This will often avoid disagreeable misunderstandings. For lettering sacks use a tin stencil and paint; for lettering forks and metal tools, a steel die is best.

Save the best wheat and oats for seed. Some parts of the field are better than the rest. When the threshing is done from the shock, it is easy to thresh, from this best wheat or oats, enough for seed, and to store it separately. If the choice grain is stacked or mowed, put it in the bottom of the stack or bay. It will keep best there, and may be stored by itself when threshed. The straw should not be stacked on a side hill. Where straw is stacked (not mowed) it is safe to say that a part will be converted into manure without passing it through farm animals. Likely no effort will be made to feed all the straw, or the feeding will be done in a way to make manure rather than flesh, as when the cattle are turned to the stack. If the straw is on a side hill the rains will leach out and carry away a good part of its value while it is being converted into manure.

If the threshing machine is operated by a steam engine, be very careful that the flue is provided with a close screen, and that there are no broken meshes in the screen to allow sparks to pass through. With a good screen there is no danger from the flue; without a screen, or with one having holes the flue is always dangerous, and especially if wood is used for fuel, or the wind is toward the straw. One will need to watch this matter closely. The flue draws best when the screen is raised; and unless closely watched the fireman will occasionally raise the screen, although he knows that it is criminally careless to do so. If the machine is operated by horse power, watch that the horses are not over-heated. In a hot day, horses will be overheated in the horse power when none but the most watchful would suspect that they are being overdriven. Finally, neither provide nor permit alcoholic drinks. Buttermilk, weak and somewhat acid lemonade, cold tea with acid phosphate, and water in which oatmeal is soaked, are the best beverages. If the men in the threshing outfit are to be boarded, arrange for extra help indoors, that the housewife and her daughters may not be overworked, and your home will be as full of happiness as your barns are of grain.

FIG 1. REAR VIEW OF COUNTRY HOUSE.

DESTROYING LICHENS ON PEAR TREES.

JOSEPH F. JAMES, UNITED STATES DEPARTMENT OF AGRICULTURE.

The presence of lichens on pear trees is at least objectionable, if not absolutely harmful, and many means have been devised by fruit growers to rid their trees of the growths. As a general thing, the various washes used have not had the desired effect, but experiments made last year, under the auspices of the Department of Agriculture, and the personal direction of M. B. Waite, special agent, show how simple a matter it is. In a large orchard in southeastern Virginia, many of the trees were infested with great masses of lichens, foliaceous and crustaceous, some adhering to the rough, exfoliating bark, and others to the smooth, green bark of small limbs. In the experiments, four fungicides were used, but only one gave any good results. This one was Bordeaux mixture, which is now so well known for its effects in preventing many plant diseases. The formula used was: Six pounds of copper sulphate, four pounds of fresh lime, and eleven gallons of water, instead of the usual twenty-two or forty-four gallons. This was applied to the trunks and larger branches with a whitewash brush, and its effect was almost immediately apparent. The lichens turned yellow, and within three weeks—and probably in less than that time—the lichens were dead. Later experiments showed that just as effective results were obtained by spraying with an ordinary spraying machine. Care should, of course, be taken to thoroughly wet the branches. When *eau celeste* was used, the results were not satisfactory.

A COMMODIOUS COUNTRY HOUSE.

D. COMINGS.

To construct a house suited to the mind of every country housewife, would be an impossibility, as the tastes and ideas of convenience and propriety in interior arrangement and appearance differ quite as widely as the necessities of the household, or the limits of the builder's purse. Hence, a great variety of plans are eagerly scanned by prospective builders to find the design best adapted to the individual purposes and tastes. The intention of the sketches herewith submitted is to give a suggestion for a good sized house, adapted to farm life, and at moderate cost. It is convenient for domestic work, and well suited for a large family, while the arrangement is modern and attractive enough to afford comfort to summer guests, if the hostess chooses to admit boarders to her family circle during the vacation season. The interior provides for a spacious parlor, sitting-room, dining-room, kitchen and six bedrooms, besides small rooms and closets in abundance. The house is 42x50 feet in extreme dimensions, and is so arranged that the rooms are grouped in convenient order about a central hall and under a roof, which is as simple as possible, and having only two breaks in the one gable to give it an irregular outline, thus affording security from leakage, and economy in construction. A broad piazza extends across half of the front, with a carriage entrance at the end, while at the right, steps lead up to the front door; this opens into the hall 12x15 feet, with stairs ascending opposite the entrance. This hall connects directly with the reception room, parlor, sitting-room, dining-room and a small entry which leads to the kitchen and back porch. At one side is a broad fireplace, which adds a very homelike cheer to a country residence. At the right on entering is a small reception room or study. Beyond this is the parlor, 15x18 feet, with a fireplace in the corner, and opening by folding doors into the sitting-room of about the same size. A family bedroom, with large closet, opens from the rear of this room, and one window looks out on the back porch. The entry affords a convenient passage into the kitchen, and cuts off the odors of the culinary department from the rest of the house. The kitchen is 10x20 feet in its extreme dimensions; the narrower end next the entry communicates with the cellar stairs and a large, well ventilated buttery, or milk room, and also has a closet in the corner. In the angle of the recess where the kitchen widens is a dumb waiter descending to the cellar; beyond is the range with hot water connections leading to the stationary tubs and sink opposite, under the windows; at the farther end is a large pantry, fitted up with china closets, shelves and cabinets for household purposes, and having plenty of light and air from the two windows, while an inside window affords a handy passage to the sink shelf in the kitchen. This pantry opens into the dining-room, thus giving the kitchen a convenient connection with the other rooms, and at the same time a retirement seldom attained.

FIG. 2. FRONT VIEW OF COUNTRY HOUSE.

Ascending the stairs, one turns to the right and enters the large upper hall, lighted by the roof windows at the rear of the house, with a bath room at one side; if there is not sufficient water pressure for bath accommodations, this will make a good storeroom. At the right of the stairs is a long bedroom running out into the towers, and having a closet on the right, and an alcove on the left, with a deep recess across the end of the alcove. A fireplace may be built here in a corner of the upper hall, if desired. Opposite the stairs is the main suite of rooms on this floor, consisting of a room 12-x16 feet, with large closet and clothes press fitted up with drawers and shelves; on the opposite side a smaller bedroom opens with a closet beyond. At the other end of the hall are two large bedrooms, with closets; the front one of these opens into a light passage leading into the long bedroom first mentioned. If desirable, the roof of the piazza may be fitted up for a balcony, and this passage used as the entrance to it. Outside communication with the cellar is had at the rollway in the rear. This design gives a plain, commodious country home at low cost; and one which, by tasteful improvements in and around the buildings, as can be afforded from time to time, will become a very attractive residence. A two-story bay window may be put on to the sitting-room, and run up through the middle of the gable end of the house; while the piazza may be extended, at the end, over the drive, forming a more elegant carriage entrance, and these additions can be made at any future season when desirable. [A perspective view of the rear of the house described is seen in Fig. 1, Page 394; of the front in Fig. 2. In Fig. 3 is shown the plan of the ground floor, and in Fig. 4 a plan of the second floor.]

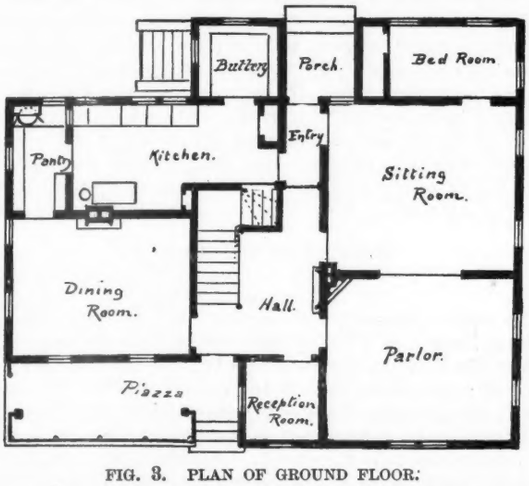


FIG. 3. PLAN OF GROUND FLOOR.

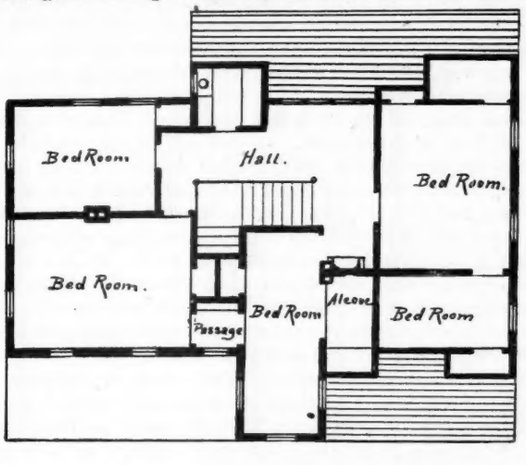


FIG. 4. PLAN OF SECOND FLOOR.

Keep the Chicks Dry.—Look out for showers, especially for the young broods. Not a few chickens are lost every year by reason of becoming drenched with rain. A coop with a tight roof and a bottom raised a short distance above the ground, low enough to be easily accessible to the chickens, so placed that the rain cannot drive in, is all that is needed. Given such a coop, and warm rain will not injure the chickens unless the storm be a long continued one.

THE RAISIN INDUSTRY IN AMERICA.

GEORGE HUSMANN.

California raisins now compete with the choicest foreign importations, even driving them out of American markets. This may be ascribed to better methods of cultivating, grading, drying and packing. Fresno is the banner county, leading all others, but Tulare, Kern, Merced, San Diego, Stanislaus, Yolo, Sutter and Yuba, all grow raisin grapes. Mr. George West, in his admirable report as Commissioner for the San Joaquin district, justly sounds a note of warning against the overproduction which must, almost inevitably, result from such indiscriminate planting of the last few years. He estimates the area in vineyards in four counties in 1891, at 62,474 acres, of which 6,044 are in wine grapes, and 56,430 in raisin grapes. A very conservative estimate places the product of the district, in four years' time, ending in 1895, at three tons per acre, or 5,600,000 twenty-pound boxes of raisins. He estimates the acreage outside of his district at 20,000 acres. These will produce, when in full bearing, 2,000,000 boxes more, making a total for the State of 7,600,000 boxes from the vines now planted. To this may be added fully 15,000 acres planted last year, which may safely be said to counterbalance any damage from poor soils, Anaheim disease, and other causes. He continues: "The consumption of raisins in America in 1890 was 3,245,716 boxes. From these statistics it will be gathered that the total consumption of raisins in America, at the present time, is about 3,250,000, including dried grapes. The yield of the vineyards in California, now planted, will, at the most conservative estimate, be double that amount."

The amount of raisins used in this country increased only 400,000 boxes from the year 1884 to 1890. Allowing for a proportionate increase in the future, the consumption of America, when the California vineyards are in bearing, may be placed at 4,000,000 boxes. From these estimates we may place the California product of 1895 at 7,600,000 boxes, and the American consumption at 4,000,000 boxes. With these facts in view, is it not well for those who now contemplate planting raisin vineyards to pause and consider, and study well the future of the industry. It is evident that the market must be relieved in some way by exportation, or the consumption increased by a reduction in price, which will place the raisins of California on the market as a staple article of food. The shipment of the fresh fruit to some of the Eastern markets would also possibly reduce the surplus to some extent. It is the belief of many that the relief will come from increased consumption. Raisins, as used now, are a luxury, and are not found upon the tables of the poor. As a luxury, the consumption will not increase in any ratio much in excess of the increase from 1884 to 1890, mentioned above, as a fall or rise of two or three cents per pound would not, in any way, affect the consumption of raisins among the people who are now using them.

Raisins must be placed before the poorer classes as a staple article of food, at a low price. As a food, nothing could be more desirable than a raisin, or dried grape. There is a small profit in growing raisins at three cents per pound, stemmed, and put up in sacks ready for market. This would place the raisins of California before the people of the East at a price lower than any other dried fruit, and no other fruit is so valuable as food. When the raisins of California are thus introduced, there can be no doubt but the consumption will be wonderfully increased, but to what extent remains to be seen. This is a point which every man now planting a raisin vineyard should carefully consider. In any event, it will take time to develop this market. With a crop of 7,600,000 boxes, 4,000,000 boxes of which we count as consumed, we have a surplus of 3,600,000 boxes, or 3,600 carloads, to dispose of as cheap goods in 1895. No grower in planting vineyards expects to average less than five tons per acre, and if this is realized, the surplus of 1895 would be 8,500 carloads. These goods will come into competition with low grade Valencia raisins. The tariff, of course, cuts a most important figure in the future of this industry. Should it be reduced, the result can but be disastrous. It is a common assertion that we have the world for a market for our raisins, but this claim is disputed. We could possibly market a few fancy goods in England, but the quantity would not be in any way perceptible in the general market. It must be remembered that when foreign raisins are driven out of America they must find a market somewhere else; and, if put upon the market in England, which is already supplied, a heavy fall in prices must result, which would make it impossible for our growers to compete with them. Furthermore, no other country of Europe, except Great Britain, consumes any quantity of raisins. Prices for raisins in California, for the next few years, will probably be good. As long as prices are kept up, planting will continue. What the result of this indiscriminate heavy planting will be, remains to be seen, and it must be remembered by those who are now planting, that every 10,000 additional acres of good Muscat vines means an additional 1,000,000 boxes of raisins to be placed on the market.

I have thus largely drawn from Mr. West's report, because he has studied the situation closely, is very clear headed, and not blinded by enthusiasm. Since his report was first made in 1891, plantings have gone on as great as ever. If this season had proved propitious to the grower, there would be a glut in the market now. But, perhaps fortunately for the industry, the first crop suffered severely from coulure, especially in Fresno county, and the quantity fell far behind what was expected. That the next abundant crop must bring a product so unwieldy that a great drop in prices must follow, is easily to be predicted. What can be done then with the second crop, which is often nearly as heavy as the first in the Muscat, is hard to tell. It is generally much lighter in sugar than the first, and the flavor is too pronounced to be at once acceptable, either in wine or brandy. It will take some time to get the consumers fully accustomed to it, and during that time no great quantities will be demanded. Grape syrup may be manufactured, to a certain extent, and is certainly a very agreeable product, which ought to find a place in every household, in place of sorghum syrup and molasses. But it will also take time to introduce this, and make the people accustomed to use it generally. It has also been suggested to make wine vinegar from the second crop, as there seems to be a lively demand for wine vinegar in the East, especially for medical purposes, at good prices. Marketing the green grapes may also afford a temporary relief. But even here the Muscat grape, although relished by many, soon clogs on the palate, as it is extremely sweet, being more like a confection than a fruit, and of a very pronounced flavor.

All this should be carefully considered by those who still intend to plant more raisin grapes, and it would certainly seem rather the best policy to plant seedless grapes, as a substitute for Zante currants, as they can eventually be made into a marketable wine, if there should be an overproduction of raisins. The Zante currant, either white or black, do not seem to succeed well enough to make their planting advisable. The Sultana has, so far, been grown mostly for that purpose, and it is certainly a fine grape, makes a good seedless raisin, and a fine wine in northern sections. But the Thompson's Seedless seems to be preferable, on account of its heavy bearing, and the superior quality of the fruit. All who have tried it seem to be unanimous in its praise. It has a loose, long bunch, and thus does not suffer from rot; its berries are very translucent, slightly oblong, and dry very rapidly into a beautiful translucent raisin, with just enough of acid mingled with the sweet to please the palate; it is easily stemmed, will carry well to market in a green state, and will, no doubt, make a very fine white wine. It is a strong grower, needs long pruning and stakes, and has averaged, with such training, over 100 pounds of green fruit to the vine. It has a very delicate flavor, not at all prominent like the Muscat of Alexandria, and, therefore, does not clog the palate.

CONSULTING THE MARKETS.

B. BUTLER.

To meet a demand for special products, one must know what the demand is. The special requirements of a market may be nothing better than a mere whim or caprice, but they must be met if a ready sale is expected. If the market requires brown-shelled eggs it is folly to offer those with white shells. The latter may be just as good as the former, but so long as the former have the call they are the ones to be furnished. Or if the market requires yellow legs and a yellow skin on dressed poultry, it is unwise to offer poultry with white skin and dark or white legs. It is true that people do not eat the shanks of fowls, and some of the best table fowls in the world have white, or dark shanks and a white skin, but so long as the fancy of the buyer demands the yellow color, that is the color to supply. One cannot afford to spend his time in educating people out of their whimsical notions, if he expects to make money out of his trade. So long as no principle is sacrificed, so long as their notions can harm no one, not even themselves, the poultry raiser is not bound to sacrifice his profits in attempting to remove the prejudices of his customers. He is raising fowls for business, not for fun, and must adopt business methods, always remembering there is some some good reason for the public taste and fashion.

FUNGUS DISEASES OF THE SUGAR BEET.

L. H. PAMMEL, IOWA EXPERIMENT STATION.

Intensified culture has, no doubt, done much to increase the amount of damage resulting from the attacks of various enemies of the sugar beet. Climate and conditions of the weather must, however, be recognized as potent factors in the spread of certain diseases. Several mycologists have attested the fact that the common cultivated beet, *Beta vulgaris*, is seriously affected with a rust, *Uromyces betæ* (Fig. 1), in California. This rust is a close kin to the common bean rust, *Uromyces phaseoli*, to wheat rust, *Puccinia graminis*, and *P. rubigovera*. Dr. B. D. Halsted writes concerning this trouble in California: "It was making much trouble for the market gardeners. In some places every leaf of the plant was badly infested, and whole rows of beets were dwarfed and discolored by the parasite." The fungus has three stages, the cluster cup stage, the summer spore stage known as the uredo, the winter spore stage known as teleuto stage (Fig. 8). The spores of the second stage are somewhat lighter in color than the teleuto-spores. Both occur in clusters, or pustules, known as "sori" (Fig. 9). For several seasons I have watched a disease known as "Spot Disease of Beets," caused by the fungus, *Cercospora beticola* (Fig. 3). This trouble is well characterized by the production of round or elliptical spots, small at first, but in severe cases becoming confluent; finally the whole leaf assumes a black and wilted appearance (Fig. 2). That this fungus (Fig. 6) materially checks the growth of beets cannot be doubted. Chemical analyses made by Prof. G. E. Patrick at the Iowa station show that there is no appreciable loss in the amount of sugar present in the beet itself. My observations for two years convince me that this fungus is more severe during September and October than earlier. The fungus is equally destructive to garden beets and mangolds; in the red leaved forms the spot is pale brown with a red border. The fungus belongs to a class which is well known for its destructive work, as the Apple Scab and Strawberry Leaf-Blight. Presumably Bordeaux mixture applied at the proper time will check the ravages of these fungus leaf diseases of beets.

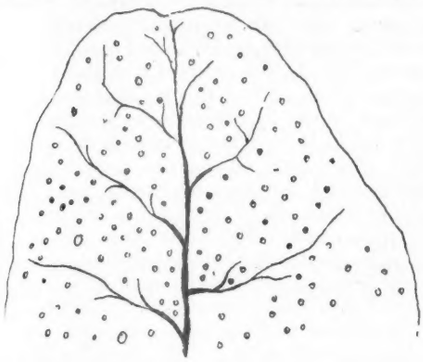


FIG. 1. RUST OF BEET LEAF.

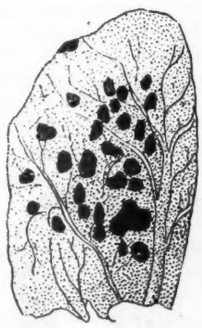


FIG. 2. SPOT DISEASE.

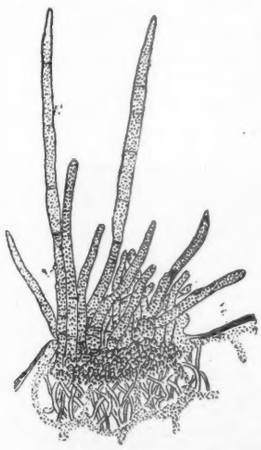


FIG. 3. BEET SPOT DISEASE.

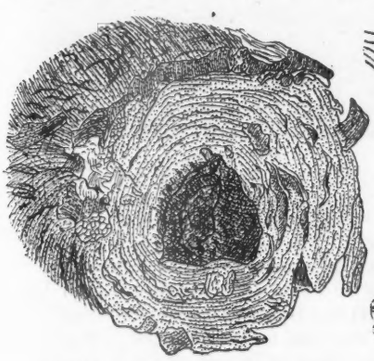


FIG. 4. BEET ROOT ROT.

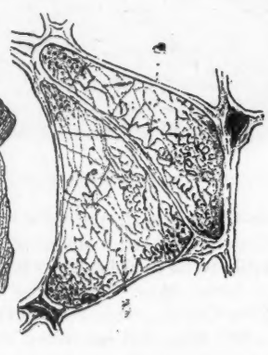


FIG. 5. BEET SCAB.

The root-rot of beets (Fig. 4) is caused by a parasitic fungus, which has been referred to *Rhizoctonia betæ*, described some years ago by a German botanist. This fungus attacks sugar beets as well as mangolds; the affected plants are entirely worthless. The leaves of the diseased plants are of pale color and more lax than those of adjoining healthy plants. It may also occur where there are no external manifestations. It occurs in patches, spreading chiefly along the rows, much in the same way as other root-rot diseases do. The affected beets are covered with the brown threads of a fungus; so far as is known this fungus does not produce spores, so that it is probably scattered by this mycelium. The fungus spreads down along the root till the smaller lateral rootlets are affected and decay sets in. On the rotting beets may be found saprophytic fungi; a white mold, *Fusarium*, is especially common, and bacteria also abound, but they are in no way responsible for the disease. The best way of treating this disease is to rotate crops. So far as I know, the fungus does not occur on any other hosts. In 1891, Prof. H. L. Bolley published a bulletin in which he called attention to the presence of scabby beets (Fig. 7), and that this scab was probably identical with that found on potatoes. Independently Dr. J. C. Arthur also showed that the two diseases were probably identical in Indiana. It seems to be quite prevalent in some localities; but in Iowa, so far, it has not been common, probably owing largely to the selection of the soil. Several mycologists have shown beyond any doubt, that potato scab as first described by Dr. Thaxter, formerly of the Connecticut Station, is a contagious disease caused by a fungus (Fig. 5) known as *Oospora*. In fact, Dr. R. Thaxter's first publication left no doubt regarding this point. It is interesting in this connection to quote from Prof. Bolley regarding the appearance of scab in North Dakota. From answers to fifteen letters of inquiry, "Fourteen say potatoes had been a previous crop, one was in doubt, but a later communication shows that potatoes were grown within a pace of the beets, and both were cultivated with the same implement." This scab is easily recognized by the fine gray mold, which covers the scabby portions. This mold is much more prominent in beets than in potatoes. It will be well to practice rotation of crops, that is, beets should never follow potatoes; a reasonable time should always elapse before potato soil is used for beets. In 1891 and 1892, Prof. J. C. Arthur found a disease in Indiana which caused a low percentage of sugar. This bacterial disease of the sugar beet is widely distributed in Indiana, but less common in Iowa. Beets showing a trace of this disease had only 11.9 per cent. of sugar while good beets had 13.3. There are no external marks, by which diseased beets can be distinguished from healthy ones, except in the leaves as they approach

FIG. 6. BEET SPOT.

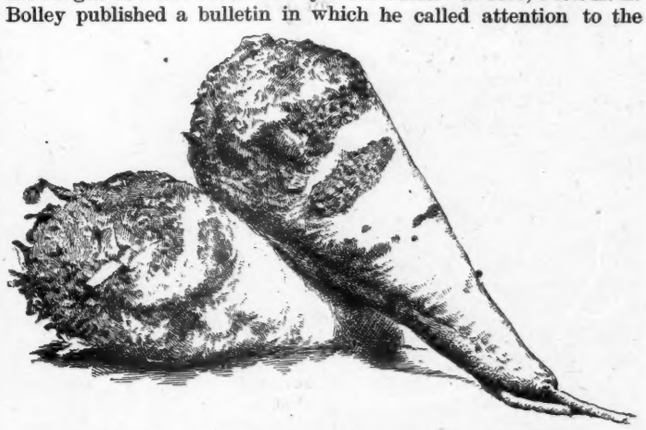


FIG. 7. SUGAR BEETS AFFECTED WITH POTATO SCAB.

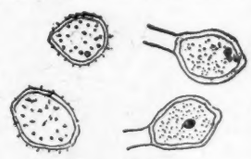


FIG. 8. RUST SPORES.

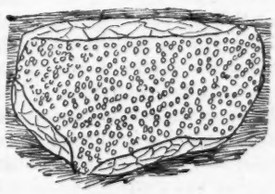


FIG. 9. BEET-RUST SORUS.

maturity. They are puffed out between the veins in little blister like areas, giving them the appearance of a Savoy cabbage leaf. A cross section of the root shows that the fibers are more prominent and dark in color. Prof. Arthur and Miss K. E. Golden, who studied this disease, have attributed it to a bacterium. They had no difficulty in obtaining pure cultures of a bacterium from the diseased roots. The writer has also seen these tissues filled with bacteria. Prof. Arthur made inoculation tests on sugar beets, and was able to transmit the disease. While this demonstration is not conclusive, it is quite probable that the bacteria cause this trouble.

PICKLING OLIVES.

LOUIS PAPARELLI, CALIFORNIA.

Olives are too bitter to be eaten in their natural state, but by means of a number of simple treatments, they are rendered suitable for table use. The methods of pickling olives are very numerous, and every olive-growing district possesses its special method to attain this object. Among the best pickles are the white olives of Ascoli, Italy, which, it is said, are considered as a great luxury, and are sold at twenty cents apiece in the best London and Paris restaurants. Next to the above are the pickles known as the Queen olives of Spain, principally obtained by using such varieties as Sevillano Gordal, Manzanillo, and Regalis; and the third are the pickles of the Picholine of France. There are several other olive varieties suitable for making good pickles in different regions, but those above noted are the best for this purpose. But it should not be supposed that all the olives found in the market under the name of Ascoli, Queen and Picholine are the genuine product; as is common with other renowned commercial products, the names of such brands that have already acquired a great credit and reputation in the trade, become merely trade names to indicate the quality of these table delicacies.

FIG. 1. SIR THARIA TOPEN'S CLOVE PLANTATION, ZANZIBAR.

For the purpose of pickling, the olives must be gathered while green, namely, one month or six weeks before maturity. The ripe olives are rarely pickled for commercial purposes, but in several of the European and Asiatic districts they are pickled or dried for home use. Of late, California olive growers have put ripe pickles into the trade, and they seem to meet with favor, in the home markets. Only good olive varieties should be propagated for pickling purposes. The unusual bitterness of the Mission olive often renders the lye treatment injurious to the ripe fruit, while the water treatment is too slow to be successfully adopted. As a rule, the olives should be picked by hand, early in the morning, or late in the evening. It is necessary to select the best fruit only, rejecting, especially, that which is imperfect, and also to free it from leaves and stems, and other adhering substances.

All modes of preparation, either for the green or the ripe fruit, can be reduced to two treatments; one using a lye of greater or less strength, the other pure water only. The treatment is as follows: The olives are placed in vats, where they are immersed in a solution of caustic soda or concentrated lye, in the proportion of about four ounces per gallon. For ripe olives, half of this amount would be sufficient. After some hours, when by several tests the fruit is shown to have been well cured by the lye, this solution is drawn off and replaced by soft water, which must be changed several times, during three or four days, until it is completely clear. Then the olives are placed in wooden or earthenware vessels with a brine; each gallon of brine containing ten ounces of salt, which is sufficient for ten pounds of olives. The lye may also be made with one part of quicklime and six parts of fresh wood ashes, well sifted. For the ripe fruit, only half the amount of lye is used. After having been in this lye for a few hours to extract the bitterness, the olives are taken out and placed in fresh water, where they will remain for about one week, being careful to renew the water every twenty-four hours. After this time the olives are placed in a brine of salt and water, as stated above. In this manner, they are preserved quite well, and will be fit for use in from one to two months. To preserve olives without lye, they are placed in a crock, or wooden vat, in which they are submerged in pure water, and a perforated frame placed above them to keep them submerged. The olives have to remain in this liquid until the bitterness has disappeared, usually from one month to forty days. The water is changed every twenty-four hours. After this the fruit is placed in vessels with brine, as above. One month after this treatment they can be used. Instead of using the brine, the olives can also be preserved in fine olive oil, and may be improved by placing fennel, pistacchio, or other aromatic herbs among them. The strength of the lye above mentioned is intended for average sizes of olives; for smaller or larger fruit the proportion of lye must be diminished or increased, also in case of those varieties which lose the bitterness easily or with greater difficulty. In case of pickling the ripe fruit—which does not keep as long

FIG. 2. UNIVERSITY MISSION-HOUSE SCHOOL, KINNGANI, ZANZIBAR.

as the green pickle—it is best to gather it when red in color, and not to wait until it is entirely black, or fully mature. The water treatment is preferable for this, and if the ripe pickles are intended to be kept for a long time, the brine has to be changed almost every month. Fully ripe olives can be preserved also by drying them in the sun, or in a fruit dryer, and sprinkling them with salt mixed with aromatic herbs; or they may be kept in olive oil.

AGRICULTURE IN ZANZIBAR.

F. C. CHAPPELL.

It will certainly not be the fault of modern explorers if Africa retains, for any length of time, its title of "The Dark Continent." Perhaps no country has had so much attention paid to it within the last half century by explorers. The list of produce grown in, and exported from, Zanzibar and Pemba, on the East coast of Africa, is soon enumerated, being limited to cloves, clove-stems, chilies, copra, cocoa-nuts, betel-nuts, a little tobacco, such grain as "sim-sim," millet, rice, and also a small quantity of wheat flour. The most important item is cloves, which were carried to the islands of Mauritius and Bourbon, by the French in 1770, and taken to Zanzibar about seventy years ago, where they became an article of general culture by the Arab planters. Previous to the year 1872, when the whole of the island of Zanzibar and the southern part of Pemba were swept by a hurricane that destroyed the clove trees, the crop reached from seven to eleven million pounds weight yearly, two-thirds of which were produced by estates in Zanzibar. It is only within the last six years that the plantations of clove trees have been restored and come into full bearing again.

The cloves grown in Zanzibar and Pemba, amount now to about four-fifths of the crop of the whole world; while their cultivation in Zanzibar has been so remunerative that almost every available acre of ground has been given up to this cultivation. The two islands are really dependent upon the clove culture for their prosperity. Practical agriculturists and men of business will readily understand that this is a very unsatisfactory and critical state of affairs, to be compelled to rely solely on the result of one form of cultivation and on one class of plant. More particularly is this the case in a falling market. Cloves have been over-cultivated, the market is stocked, and the demand appears to be diminishing instead of increasing. Some years ago prices ranged from seven to ten dollars per frasila (thirty-five pounds), and the export duty was thirty per cent. *ad valorem*. Prices do not exceed two and one-half to two and three-fourth dollars per frasila, and the duty has been reduced to twenty-five per cent. A little more than fifty per cent. of the clove crop of Zanzibar and Pemba, is exported to Bombay and New York in about equal proportions, the remainder going to London, Bremen, Trieste and other ports. The cultivation of cloves requires a large supply of labor, while whole plantations are exposed to the ravages of any cyclone. Considering the capriciousness of the market, and that cloves are not articles of necessity, nor of every-day want, it would seem to be more prudent for the Arab planters to use a part of their land, at any rate, for some other crop. Clove-stems have now become a very important product among the exports of Zanzibar. The "clove-stem" is that part which joins the bud, or the clove itself, to the branch of the tree. The cloves are used partly as spices and partly for the oil which they contain. The stems also contain a certain quantity of oil, and are used for mixing with and adulterating pure clove oil. Second in importance to this plant is copra, or the inside of the cocoa-nut, which is crushed for cocoa-nut oil. Most of the copra goes to France, which appears to have a monoply of the trade. Chilies or red peppers come next among the products sent to foreign lands. England takes fifty per cent. of the shipments, and New York and Marseilles the remainder.

Fig. 3. ZANZIBAR VILLAGE.

As regards agricultural tools, I may say that no machinery is used by the natives. Their style of agriculture may be shortly described as scratching the surface of the ground with a broad-bladed hoe. Some of these hoes are made in Germany, but the great majority are of local manufacture. Of course this wretched system, or want

of system, does not do justice to the soil, nor is a field thoroughly cleared. There can be little doubt that by adopting a more careful style of cultivation, proper implements, and better labor, the produce of the islands would be very largely increased. The main difficulty is in getting the Arabs and natives to change their habits. They are inordinately suspicious of any innovations or improvements. There are many thousands of acres of really good soil lying fallow, overgrown by all sorts of tropical grasses, creepers, and bushes, but bearing nothing beyond a few cocoa nuts. The cause of this waste is the Arab domination—a domination, however, which appears to be coming to an end. These slave-owning proprietors of the soil, have made slave and ivory hunting, together with clove growing, their only business. Slavery, and slave-hunting are doomed, while the ivory trade is rapidly becoming a comparatively small item in trade. Reference has already been made to the future of the clove cultivation, and if the Arabs are depending on that for assistance, they are trusting to a frail support. Taking all these facts into consideration, it appears evident that in a few years a great quantity of land will pass from the Arabs into the hands of Indian and European planters.

At the present time the Arabs own nine-tenths of the land, and have from the date of their first arrival in the islands been accustomed to use only slave labor in their plantations. In consequence of the efforts of the several European powers, the supply of new slaves has been almost entirely cut off and, therefore, the want of labor felt very seriously. This is the main reason why so many thousands of acres of valuable land have now been allowed to lie fallow, and become overgrown with a wild luxuriant growth of creepers and grasses. With the introduction of roads, tramways, machinery and other means of economizing labor, and above all, with the establishment of a few European or American landowners, Zanzibar and Pemba would undoubtedly become very wealthy. So long, however, as the land is held by the present set of half-bankrupt, retrogressive, slave-owning Arabs, there can be no prospect of any agricultural advance. The Germans, on the mainland, are now displaying considerable activity, and many of them are making good profits in different kinds of cultivation; but that is because they have done what no other Europeans have thought fit to do—namely, taken up land and cultivated it themselves.

The two islands have a most fertile soil, a tropical climate, and a yearly rainfall of from eighty to one hundred and forty inches. So rich is the land, that wherever the ground is not cleared for cloves, it is usually overrun by a luxuriant growth of aloes and common pineapples. The "San Severino" aloe grows wild in every direction, and contains a fiber of considerable value; likely to yield a handsome profit to both the cultivator and to the owner of the fiber-extracting machinery. Pineapples grow in the wildest profusion, and with a little care would give excellent results. The leaf of the pineapple contains a fiber of considerable strength and fineness, which has been used to advantage in mixing with silk. The excellent cocoa-nuts which grow in hundreds and thousands, are picked only for the copra, the part from which cocoa-nut oil is crushed. No notice is taken by the natives of the valuable fiber of the outer husk which has hitherto been thrown away as useless. An English firm has set up a plant of fiber-extracting machinery in Zanzibar, which will deal with all these kinds of fibers. Machinery of this description, and for this purpose is, I believe, allowed to enter the country free of duty. Oranges, sago palms, cassava, or manioc, all grow in great abundance. Sir John Kirk, while in the island, planted some Liberian coffee plants, but it is reported that they have not flourished, being attacked with the same disease which destroyed the plantations of Ceylon. [Our illustrations on the preceeding pages, engraved after photographs, present, in Fig. 1, Sir Tharia Topen's clove plantation, in Fig. 2 the University Mission-House school, at Kinngani, Zanzibar, and in Fig. 3 a street scene in a Zanzibar village.]

INBREEDING OF BEES.

B. BEAVER.

When there is but a single colony of bees for miles around, it is very probable that close inbreeding is practiced. This would seem to arise from the necessity of the case. For many years and by the best authorities, inbreeding was supposed to be the rule among bees, based upon the fact that the hive was tenemented by a single female, and the known hostility of the bees of different hives. But Tegetmeier has shown that this hostility does not apply to the drones, which are permitted to enter any hive unmolested, and Darwin believed that "the union invariably and necessarily taking place on the wing, during the queen's nuptial flight" was a "special provision against continued inbreeding." It is very certain that cross-breeding is often resorted to, proof of which is found in the cross-bred bees. Darwin cites the following cases: "Mr. Woodbury, who introduced Ligurian bees into Devonshire, found during a single season, that these stocks, at a distance from one to two miles from his hives, were crossed by his drones. In one case, the Ligurian drones must have flown over the city of Exeter, and over several intermediate hives. On another occasion, several common black queens were crossed by Ligurian drones, at a distance of from one to three and a half miles."

It is not altogether improbable that the nuptial flight of the queen is induced by the collecting of drones, which call her by their loud humming. This may be the signal to her to start on the journey that is to prepare her for her life work; and the presence of a virgin queen, ready to take her nuptial flight, may be scented out by the bees. It does not seem necessary, therefore, to hold that inbreeding is the rule in situations where the reverse is possible, and the free out-crossing of different varieties, the collecting of drones in great numbers in out of the way places, the absence of hostility to foreign drones, and the liberal provision throughout nature, to prevent inbreeding and secure crossing, all seem to converge to the idea that inbreeding is resorted to only when circumstances compel it, that it is probably the exception rather than the rule, and that crossing is nature's method of keeping up the constitution of the bee. This may be theory, but the reverse is also theory, and this theory really seems to have the stronger support.

SHINGLES AND SHINGLING.

D. WEBB.

It is a matter of no small expense to keep the roofs of farm buildings in a sound and tight condition. Want of proper selection of shingles, of proper care in laying them, and in protecting them from the weather, are responsible for much of the cost which often seems a burden. The saying that what is worth doing at all, is worth doing well, is eminently true of the selection, laying and care of shingles. In the first place, it is false economy to buy, or have made from the product of one's own wood lot, shingles of inferior quality, full of sap, or of a coarse, porous, or shaky nature, which permits water to enter the grain, soon ending its usefulness.

Roofs soon become almost worthless through carelessness in laying the shingles, joints not being properly "broken," and water thus let in to cause rapid decay. Another point is that an unprotected shingle, even a good one, severely exposed as it is to the action of the weather, has vastly less durability than it would have if covered with some moisture-proof material. Even a cheap quality of paint will prove a great protection. If paint is thought to be too costly, there are often materials to be had that will well repay applying to the newly-laid shingles, or to use as a dip before they are laid. Tar, crude petroleum, whitewash—all these are efficacious, if properly and thoroughly applied. Such applications mean better looking buildings, and roofs that will long outlast those not similarly treated.

It is much better, in cold climates, at least, to use shingles, underlaid by thick building paper, upon the walls of farm buildings, instead of clapboards, as the former are warmer, and, if well laid, and painted, or stained, will look better than clapboards. In any event warmth ought not to be sacrificed to looks, and shingles certainly afford far better protection against the entrance of cold air than do clapboards. The great point in the use of the former is to secure good quality, to lay them with great care, as regards joints, and to properly protect the wood from the action of the weather. Such care will be repaid in the durability that will thus be secured.

SHORT FURROWS.

MARION RAMBO.

An ounce of brain is worth a pound of brawn.

Gold-brick men bait for rascals and catch them.

It is a great fault to be continually fault-finding.

You never get nearer heaven by stepping on other people.

No ghosts are so hideous as the recollections of one's own sins.

A milking stool is a poor thing with which to quiet a fidgety cow.

He that does not produce as much as he consumes is a deadhead in society.

It is bad manners to be more polite to your neighbor's wife than to your own.

FLOWER SEEDS TO BE SOWN IN JULY.

C. L. ALLEN.

There are many kinds of flowers, the seeds of which should be sown this month, in order to secure satisfactory results. Prominent among these are the perennial Delphiniums, the varieties of which are among our most valued hardy herbaceous plants. The seeds of these lose their vitality so quickly that, to await the coming season, is to defeat the purpose for which the seed is sown. Sow the seed thinly, either broadcast or in drills, in any convenient place left vacant by some early crop; protect from drying winds, by lattice frames, or fresh cut grass, or light boughs. The seeds will germinate quickly and make plants sufficiently strong to withstand the rigors of winter. In early spring, upon the first appearance of growth, transplant to where they are to remain. Being hybrid forms, a great variety of colors will be obtained, even though the seed be saved from one plant only; the predominating colors will be blue of an intense type, but all shades that blue, bronze and white will produce may be found. By cutting back the stalks as soon as the flowers fade, they will immediately make new growth, which will produce flowers in the autumn. By packing the seeds away in brown sugar, slightly moist, as soon as gathered, they will retain their vitality until spring, when they may be treated as annuals, that is, they will flower the first season, but not until late in autumn, but at an acceptable time, as light frost does not injure them. Pansy seed, for autumn flowers, may be sown with perfect success in July. It will require protection against the sun, by a lattice screen, or brush. The covering should be removed as soon as the plants have made two pairs of leaves, after that they will grow rapidly, and, if the autumn should prove a wet one, they will flower as satisfactorily as in spring. With the protection of a frame, during winter, the plants will be in the best possible condition for early spring flowering.

FLOWER AND LEAVES OF THE ORIENTAL POPPY.

Oriental Poppy (*Papaver orientalis*). The seeds of this showy perennial *must* be sown this month, or as soon as they ripen, to insure success. No seeds lose their vitality more quickly, hence, the necessity of early sowing. As the seedlings are very difficult to transplant, the seeds should be sown where the plants are to remain. They may be sown to advantage among annuals, where the ground is not densely covered, and, as they root deeply, they will come out ahead in their struggle for existence. The shade afforded by the annuals is a help, rather than a hindrance to their growth. After the first season's growth, they will monopolize the ground, and thrive for years if left without any disturbance. Hollyhock seed may be sown this month, as soon as it is ripe. As the plant is a strong grower and a gross feeder, it must have a deeply prepared soil; one of a loamy character will best suit it. If the seed is sown in such this month the plants will flower the coming season. While the Hollyhock is perfectly hardy, if properly cared for, it is not infrequently killed in winter by alternate freezing and thawing. But if after the ground is frozen to the depth of an inch or two, it is heavily mulched, too, with newly fallen leaves, no injury need be feared.

All the Dianthus family, which includes the hardy Carnations and Picotees, can be had in perfection next year, if the seed is sown this month. To insure success, the seed should be sown in well prepared beds of rich soil. When the plants are two inches high, transfer them to the places where they are to bloom. All the varieties appear to the best advantage when grown in beds, about four feet in width. Set the plants in rows one foot apart, and six inches apart in the rows. Upon the approach of frost, fill in between the plants, level with their tops, with newly fallen leaves. These have to be removed when growth commences in spring. Sow seeds of mignonette for autumn flowers. The cool, moist weather of September is just what it requires for a vigorous growth; the plants will develop strong spikes of flowers, without branching. Sow the seed rather thickly, and thin out the plants to an inch apart each way. A light frost does not injure them. Sow the variety known as the Machet, as it is the most vigorous grower, as well as the most hardy sort. Candytuft, particularly the White Rocket, comes in very handy for white flowers in autumn, when white flowers are scarce. Seed sown this month will make flowering plants in September, and they will continue in bloom until destroyed by frost. Sow the seeds of all hardy herbaceous perennials as fast as they ripen. In some cases the growth will be small, in others the plants may not appear the same season, but if the seed bed is protected by a covering of leaves, kept in place by brush, or pieces of boards, the plants will appear in early spring, and in most cases perfect their flowers during summer. By this method a year's time will be saved, and the almost certainty of the seeds germinating insured, which will not always be the case when sown in the spring.

Shipping Plums.—For the last few years, the most popular way of shipping plums to market has been in the ten pound grape basket with cover attached. These not only make convenient packages, but look neat, and are easily carried home by the customer, who finds a ten pound basket to contain enough for several meals, both for cooking and for eating, when placed upon the fruit plates. Baskets also afford an expeditious way of gathering the fruit, as a

careful man places the plums in the basket as fast as gathered. This saves rehandling, and the bloom is not removed, nor the fruit bruised in rehandling. If shipped the same day as gathered, the basket should be filled a little more than even full, so that when the cover is fastened down the fruit will not shake, or become loose, after two or three days of settling either on the cars or stand.

UTILIZATION OF WASTE HEAT.

L. B. PIERCE, OHIO.

A friend in an adjoining county has a ten-horse-power engine used to run electric lights and some machinery. He has a garden across the road, and in this garden he has hotbeds and a plant-house which he heats with the exhaust steam from this little engine. The steam is conveyed in a six-inch sewer pipe under the road, and enters under a hotbed about sixty feet from the engine. It runs under hotbeds nearly 100 feet, and then makes various turns under a plant-house thirty feet square. The pipe is about two feet below the surface of the ground, and the paths of the greenhouse are cut down into the earth so that the eaves of the house are only one foot from the ground, which is filled up, about a foot and a half, with earth taken from the paths. As the engine runs only ten or twelve hours a day, it was found necessary to arrange for the conservation of more heat than would radiate from the ground, and a very ingenious method was adopted. An inch iron water pipe was inserted in the middle of the sewer pipe a little distance from the street, and carried along in it to the greenhouse, and there it is taken up under the glass, and carried around and across until 190 feet in all are used, when it is carried into the ground and returns under a range of hotbeds back to where it started. At first an expansion pipe was arranged to allow for the difference in volume of water at different temperatures, but experiments showed that by connecting with a hydrant, which was under a pressure of about forty feet, from a tank on the hill, the expansion pipe could be dispensed with, and that warm water could be drawn from the pipes in the greenhouse for watering. Inside the greenhouse about sixty feet of three-inch pipe are used, thus giving a larger body of hot water.

The staying power of this heating apparatus is shown by the fact that on December 26th, with the thermometer at 4° below zero, there was heat enough to protect squash vines, chance vines from manure, and radishes appeared above the soil that were not up on the 24th. The interval in which there was no steam was from nine o'clock on Saturday evening, until seven on Monday morning, or thirty-four hours. The greenhouse is a peculiar construction, being a glass central roof of about twenty feet square, with a slight pitch of about one foot in six. On the east, south and west sides six-feet sash go to the eaves at an angle of one-fourth pitch. In the connecting angle is a single sash, with three triangular bits of ceiling to fill out. The owner thinks this method of construction with sloping sides and low position in the ground is much less influenced by sweeping winter winds than the usual form of greenhouses, while a maximum of light is obtained, and the plants are quite close to the glass.

March 4th, at the time of my visit, about one-third of the house was occupied with beautiful lettuce that sold readily at thirty cents per pound, and in the other beds were about 50,000 young onion plants. In the hotbeds were various kinds of plants, such as lettuce, radishes, cabbage, etc., besides rhubarb and asparagus, for forcing. When one reflects that all this winter gardening was being carried forward with the waste or exhaust steam from a little ten horse-power engine, running twelve hours a day, six days in the week, the result seems wonderful. It suggests, in a limited degree, the amount of heat that is wasted by the big batteries of boilers that furnish power to engines of several hundred horse-power. The man who owns the greenhouse referred to above, has made considerable money by ingenious ways of utilizing things that others waste, and there is yet a broad field for others to tread with the same thoughtful economy.

RAISING FLOWER SEEDS.

L. A. CHARLES.

When plants are grown for seed, a few of the first flowers should always be removed. This is particularly necessary to the propagation of double flowers, as the first blossoms are usually semi-double, and will give seeds that will, in their turn, produce plants with single flowers. Double flowers are the result of high cultivation, and it is only by such that good seed can be obtained. Consequently, have the stock-seed bed as rich as possible, and when the flowers are in their greatest perfection, remove all buds except the few that are partly opened, and, at the same time nip the seeds of the branches, in order that no new buds can form, which will, usually, cause the flowers already opened, and those opening, to yield seed which they would not otherwise do. When a plant produces a flower which is considered perfect, take off all the other flowers from the plant, and carefully protect this from all harm. In most species a single capsule will contain all the seed necessary for next year's crop. The bed, in which plants are grown for stock-seed, is the very soul of the garden, possessing no attractions for any but the happy owner, who sees in it a sure promise of reward, in the splendor of his garden in future years. This is a work that can be made profitable as well as pleasant. There is not a seedsman in the country who would not be glad to secure stocks of any variety of flowers or vegetables that have been greatly improved by careful selections and cultivation.

AN EXPERIENCE WITH WEEDS.

F. PARK.

Very few farmers realize the fact that it costs just as much to grow a crop of weeds and ripen the seed, as it does to grow any other crop, without taking into consideration what it costs to get rid of the result. Many a field of corn is neglected after the regulation number of hoeings and cultivatings are finished. The cultivating of a crop is not complete until it is harvested, and, if weeds appear after the crop is so far advanced that the horse cannot be used, the hoe must be used as vigorously as necessity requires. The loss, by allowing weeds to grow in among other crops, is much greater than is generally supposed.

Last spring an acquaintance planted one and seven-eighth acres with cabbage for seed. Another set out two acres. The soil was prepared in the same way and in the same condition. The plants put out were of the same variety, and in all respects equal. Each had the same start, and, until the plants came into bloom, were equally promising. When the cultivator had finished its work, the latter paid no further attention to the crop, but the former continued the work of destroying weeds until the crop was nearly ready for the harvest. And when the crop was cleared from the land, the ground was comparatively clean. Long before A's crop was ready to cut, the weeds were higher than the cabbage. The result was that the thorough weeding gave nearly 1,800 pounds of seed, and the poor cultivating gave a little less than 900 pounds. The facts in the case were, that the weeds took the plant-food from the soil that the cabbage required, and should have had for the development of the seed. In this instance, not more than six days' work would have been required to have given the farmer $400 more for his crop.

Weeds in the corn field are just as unprofitable as in the cabbage field; the farmer that keeps his fields the cleanest invariably has the best crop, not only of the grain but the fodder as well. The weed is a persistent robber, and is not at all discriminating; it claims the earth as its own, and will fight for possession with whatever useful plant that is introduced. The wayside weed is no less a robber, and should not be tolerated; it usurps the place of beautiful and useful grass, and ripens its seeds, which are disseminated through the agency of the wind and birds for miles around. Laws have been enacted, making it binding upon every land-holder to cut all the weeds on the roadside adjoining his property. Where it is, or has been, respected, a marked difference in the appearance in the roadside is manifest. Where once the ragweed and wild chickory grew rampant, are now seen beautiful grass-plats, which add greatly to the appearance of the farm, as well as to its actual value.

The law is not far-reaching enough, and should extend to waste places of the field, the weeds' breeding ground. When we see how rapidly and widely seeds are scattered by the wind we can realize the difficulty the farmer has to keep his farm clean, when he has slovenly neighbors. Weeds are a nuisance, and no man has the right to tolerate them on his farm, to annoy his neighbor.

Clean Cultivation of Small Fruits.—Strawberries, raspberries and other small fruit plants require frequent and clean cultivation to produce the best results. When grown in large quantities, they should be so planted as to admit of horse cultivation. On land free from stones, a careful man with a steady horse and the use of the improved cultivators the work can be so neatly and closely done that but little use of the hand hoe is required. The great point is to commence the cultivation early, when the weeds are small and easily destroyed with shallow stirring, which disturbs no roots.

TWO BEAUTIFUL ROCKY MOUNTAIN PLANTS.

F. W. ANDERSON.

A highly ornamental flowering shrub, *Philadelphus Lewisii*, popularly known as "Ealse Syringa," is very common in Montana, and westward. It varies in height, according to the quality of the soil and the amount of moisture. On the stony hillsides it grows only three or four feet high, while in more favorable situations it attains a height of twelve feet, and branches copiously. The branches themselves are very liberally supplied with short, irregular, rather crooked branchlets, which bear a profusion of flowers from about the end of May until the middle of June. The bark of the branches is a rich, chocolate-brown, or in older branches nearly black, or even grayish in color. The leaves are an inch and a half long from ovate-acute to oblong in shape, smooth, and of a most refreshing bright green color. The flowers on robust shrubs measure an inch in diameter. They are from almost pure white to a delicate creamy tint, and pleasantly fragrant. Growing in clusters close above, or nestling among the leaves, they look especially charming, thus contrasted with the fresh green masses of foliage. This species of *Philadelphus* seems to be new to florists. As a novelty several points are worth remembering: First, its great hardiness; second, its general beauty produced by the strongly-contrasted masses of bright foliage and delicately tinted fragrant blossoms; and third, its natural inclination to variability of growth which, although great, is so easy of control that the shrub can be induced to grow into almost any form desired. Some florist should introduce this beautiful shrub, that it may adorn our conservatories, gardens and parks as gracefully as it does the mountain solitudes of the "Rockies." Many will remember an old-time garden flower called "London Pride." It grew in the garden of my grandfather when I was a child, and was admired for its simple, unobtrusive beauty. A similar plant grows in the Belt Mountains of Montana. Its scientific name is *Saxifraga punctata*, and it is very like the *Saxifraga rotundifolia*, of Europe. Its most luxuriant growth is attained in rich, wet ground, and it even takes root in the bottoms of shallow rills flowing from the mountain springs. The leaves all grow directly from the crown of the root, are bright green in color, borne on long leaf stalks; their edges are deeply and equally toothed, and in general outline are rounding or kidney shaped. One to three flower stalks, straight and slender, and from one foot to twenty inches high, rise from the center of a cluster of these leaves, and uphold a loose, naked panicle of pure white to pinkish flowers. The simple beauty of these flowers is greatly enhanced by the rich, chocolate colored stamens within them. Altogether, the plant is so fresh and pretty, so charming, and yet so modest in appearance, that it would be a floral gem to add to a shady corner of a garden, or to the verge of a private lake, fishpond, or other moist place. [Fig. 1 shows a flowering branch of the False Syringa, and Fig. 2 gives a somewhat inadequate idea of the Spotted Saxifraga, much reduced in size.]

FIG. 1. FALSE SYRINGA.

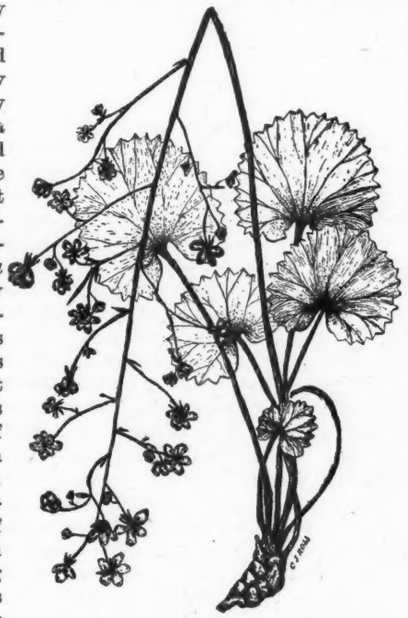
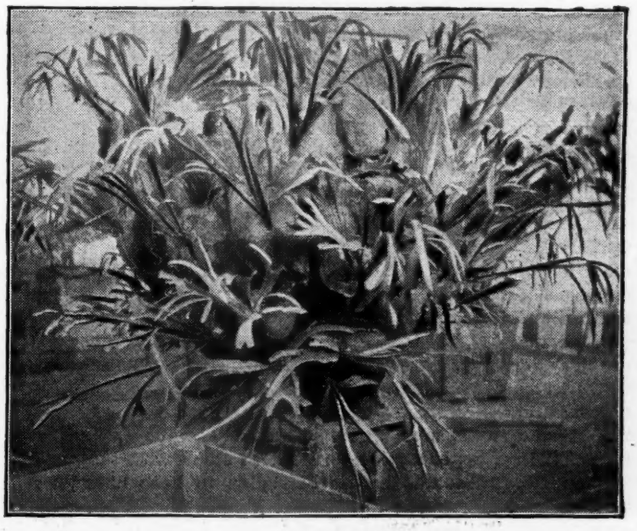


FIG. 2. SPOTTED SAXIFRAGA.

THE STAG HORN FERN.

In the Horticultural Exhibit of the World's Fair, one of the most interesting plants is the Stag or Elk Horn Fern (*Platycerium alcicorne*) from New South Wales, Australia. The fertile fronds, each several feet long are divided into two forked broad segments like elk or moose horns. These ferns are of the grandest and most extraordinary beauty. The fronds and rhizomes form great masses five to six feet through, clasping the original tree of six or eight in diameter, precisely as they grew in their native woods. Very long ago a few spores started into young growth on the bole of a tree, and year after year multiplied and entirely surrounded the bole, until now there are perhaps a circle of two feet of decayed vegetable matter, between the current growth and the bole, on which it fastens, the same being a veritable nest of insects and plant seeds, and an interesting study to the scientist. Our illustration, engraved from a photograph presents a clump of these noble ferns as they appeared after their long sea voyage from the distant antipodes.



STAG-HORN FERN AT THE COLUMBIAN EXPOSITION.

WASHING AND GULLYING OF FIELDS.

JOHN M. STAHL, ILLINOIS.

Hilly land and a friable soil call for intelligence and vigilance to prevent washing and gullying. Of first importance is it to do the necessary work promptly. If a gully is taken in hand at its incipiency, both the repairing work and the damage done will be at the minimum; and every day's delay, especially in wet weather, rapidly increases the loss of soil as well as the labor required. The heavy rains make many little gullies that the showers rapidly enlarge if proper attention is not given. Corn cobs make an excellent material for stopping the smallest gullies. As soon as they are water-soaked, they are so heavy and settle so snugly together, that the rains will not dislodge them; while the plow, or harrow, will pass through them. They can be used in locations or near the surface where the use of stone or logs would be impracticable. For the larger gullies, stones or logs may be used, as may be most convenient. The gullies should not be filled with these to the surface, for they would give the plowman painful surprises, and would interfere with cultivation. Nor is it necessary to fill up to the surface at all, except, perhaps, at places quite far apart. In fact, it is not necessary to fill along the entire course of the gully. If obstructions are placed every few yards, to check the current, and arrest the debris and sediment, the water will do the rest.

For the largest gullies may be used, in addition to the materials already named, large stones or stumps with great projecting roots. Stones are good, as no ordinary current will dislodge them; and so

are stumps, for their roots will so interlock as to form a solid mass. It is well to throw against the upper side of barriers of stumps or large stones, first close brush and then straw, that debris and sediment may be well caught; though this is not absolutely necessary. The closer the brush the better. Of course the butts of the branch should be up stream, and it must be staked securely in place, the stakes inclined up stream, lest the water may lift the brush over them. It is surprising how rapidly gullies will fill when an effective barrier is made. Some years ago I bought some land across one corner of which was a gully so large that at almost any point a team could have been hidden in it. At the lower end I threw stones, stumps and brush until a barrier sixty feet long and level with the surface, was made. Nothing was done above this. In four years the gully was filled along its entire course, except a shallow water course not a foot deep, over which a team with plow, harrow, or self-binder could be driven. This water-course was seeded down to grass, and is now scarcely more than a strip of turf, depressed a few inches below the level, not interfering at all in cultivation.

Much can be done to prevent washing and gullying, although one must not ignore the fact that the surface water will find a way off the land. One should retard the flow of the surface water, but not too much. It is the golden mean that is wanted — either extreme is to be avoided. If the flow of the surface water is so much obstructed that it is pent up into a considerable body, it will break its way out in a powerful current that may do great damage. On the other hand, if its course is unimpeded, it will develop a flow so rapid as to have a decidedly denuding capacity. If the flow is gently obstructed, the land will be cut less, while more of the debris and sediment will be deposited along the way.

To plow around a hill and to have corn rows or wheat drills encircle it is often much better than to have the furrows and drills extend up and down the hill. It is true that if there is an exceptionally hard rain, the water may break through the ridges and make one or two serious gullies; but the loss of soil is even in this case considerably less than if the flow of the surface water down the hill were unchecked, and the saving by having the little terraces around the hill is comparatively greater when the rain is an ordinary one. If there are natural channels down the hillside, that is, if there are little valleys extending down the hills, it is well to take advantage of them by allowing a narrow water course not more than a foot deep along the bottom of the valley, which should be seeded to grass, or may be paved with stone when that material is plentiful. Undoubtedly the best plan to keep hillsides from washing and gullying is to keep the ground almost altogether in grass crops, or those cereals that do not require cultivation and have a close root formation. To put corn or other cultivated crops on such land is bad management. Such land is more suitable for dairying than for hog raising. While the inconvenience in cultivation resulting from the gullies is to be avoided, it is of more importance to prevent the loss of soil by denudation.

INDIVIDUAL DEVELOPMENT OF PLANTS.

G. A. WOOLSON.

A plea for fewer and better developed plants too often falls on deaf ears of omnivorous flower growers, who crowd and choke their gardens with a little of all within their reach, until the effect produced reminds one of the crazy-quilts which so distract the judges of country fairs. Just what a single plant is capable of, is oftener demonstrated by accident than otherwise.

The tiny poppy seed blown by a puff of wind into some sheltered nook, surprises us with a luxuriant plant loaded with buds and blossoms; contrasting strangely with the myriads of slim "leggy" plants which fill the ordinary poppy bed with limited bloom. Such spindling masses best illustrate the doctrine of strength in unity, for if divided they certainly fall. Likewise the bit of gray chaff which escapes the hoe in the garden walk and spreads a white mat of alyssum at your feet; devoid, indeed, of heart must be the man who wipes his feet—much less his hoe—on these dainty but misplaced rugs.

One of the most attractive plants in my garden last summer was a common red-flowered canna. When placed in the ground the root had sent up but one stalk which was unfolding its second leaf. I thought possibly another stalk might appear later from a slight node in the tuber. But no growth whatever was visible for some time, and my center-piece was conspicuous by its inferiority. Scraping the soil away from the plant some ten or twelve inches, cow manure was generously piled in; this fertilizer was not of the venerable sort "well rotted" or "thoroughly decomposed" which we are often advised to use, but was, rather, so offensively verdant that it was quickly buried from human sight. Water in abundance was daily given. Marvelous if not miraculous was the result. Thirteen great stalks of richly colored tropical foliage, with blossoms galore, succumbed to Jack Frost; and when the mass of tubers was unearthed my one bulb had virtually returned an hundred fold, for even when dry a panful remained. So much for a chance in life. The same treatment works admirably for the caladium and castor bean.

LATHYRUS SILVESTRIS AT HOME.

SPIEGEL SAMU, BUDAPEST, HUNGARY.

Leguminous plants possess a high proportion of albumen, draw little nitrogen from the soil, and readily establish a strong development of roots, to resist drouth. These traits drew the Flat Pea, or Wood Chickling Vetch (*Lathyrus silvestris*), to the attention of Prof. Paul Wagner, of the agricultural research station, at Darmstadt, Germany, who found the plant in Hungary. Prof. Wagner, observing this plant, noticed that the ruminating wild animals eagerly search for it and eat it readily, while only in winter time, and under the utmost necessity, will they eat the alfalfa or lucern hay exposed for them, preferring the dry stalks of the Flat Pea rising above the snow. The Flat Pea grows among the underbursh in mountainous countries, particularly on sandstone and slate, proving its value for poor, stony soils, which suffer from lack of moisture. By careful selection and cultivation, the bitter principle in the wild plant has been eliminated in such a surprising manner that the fodder is now sweet, and greatly relished by domestic cattle. The trials in Germany give wonderful results, and it seems, therefore, justifiable to call the attention of farmers to this plant, because it promises a very good future for dry countries. The nutritive value surpasses that of alfalfa or lucern; its roots go as deep, and even deeper than grape roots, and it grows luxuriantly even where, on account of the poorness of the soil, the alfalfa cannot thrive. In richer soils it thrives, of course, so much the better. By its strongly developed system of roots, with the ability to grow between the stones, and to extract from the soil in the interstices the necessary plant food, it adapts itself very well to stony, coarse and dry soils. Plants one year old already have roots six feet long, and older plants have roots twenty to thirty feet long, and very tough.

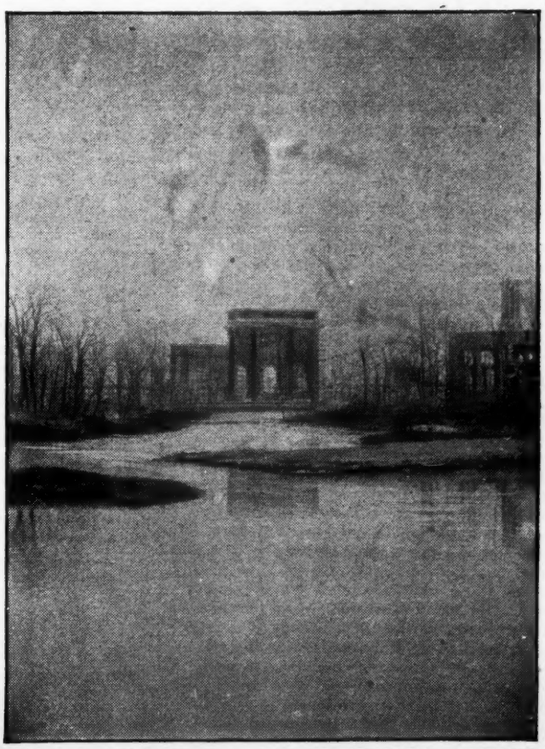
The development of the Flat Pea above the ground is, however, not less vigorous than the subterranean. Every year numerous stalks shoot forth out of the root crown. A plant of three years, growing in coarse rubble-stone, showed, for instance, eighty-seven stalks, which averaged six feet in length, with seven hundred and six seed pods, a splendid result, considering the poor soil in which it grew. The content of protein and fat in the hay of *Lathyrus silvestris* is far greater than in any other forage plant, and surpasses malt-germs and brans. The chemical analysis of this Flat Pea is as follows: Fat, 4.34 per cent.: protein, 25.44; digestible stuffs, 4.50; indigestible stuffs, 20.94; wood-fiber, 31.41; nitrogen free extract, 33.05; earthy matters, including sand, 5.76 per cent. This brilliant result with leguminoses surprises one, for the greatest usefulness has been shown, by the feeding trials, to belong to the Flat Pea. The owner of a large estate in Bavaria has fed his milking cows with Flat-Pea fodder during fourteen days. Soon after the first days the cows gave more milk, the yield of butter was considerably greater than formerly, and the quality was improved.

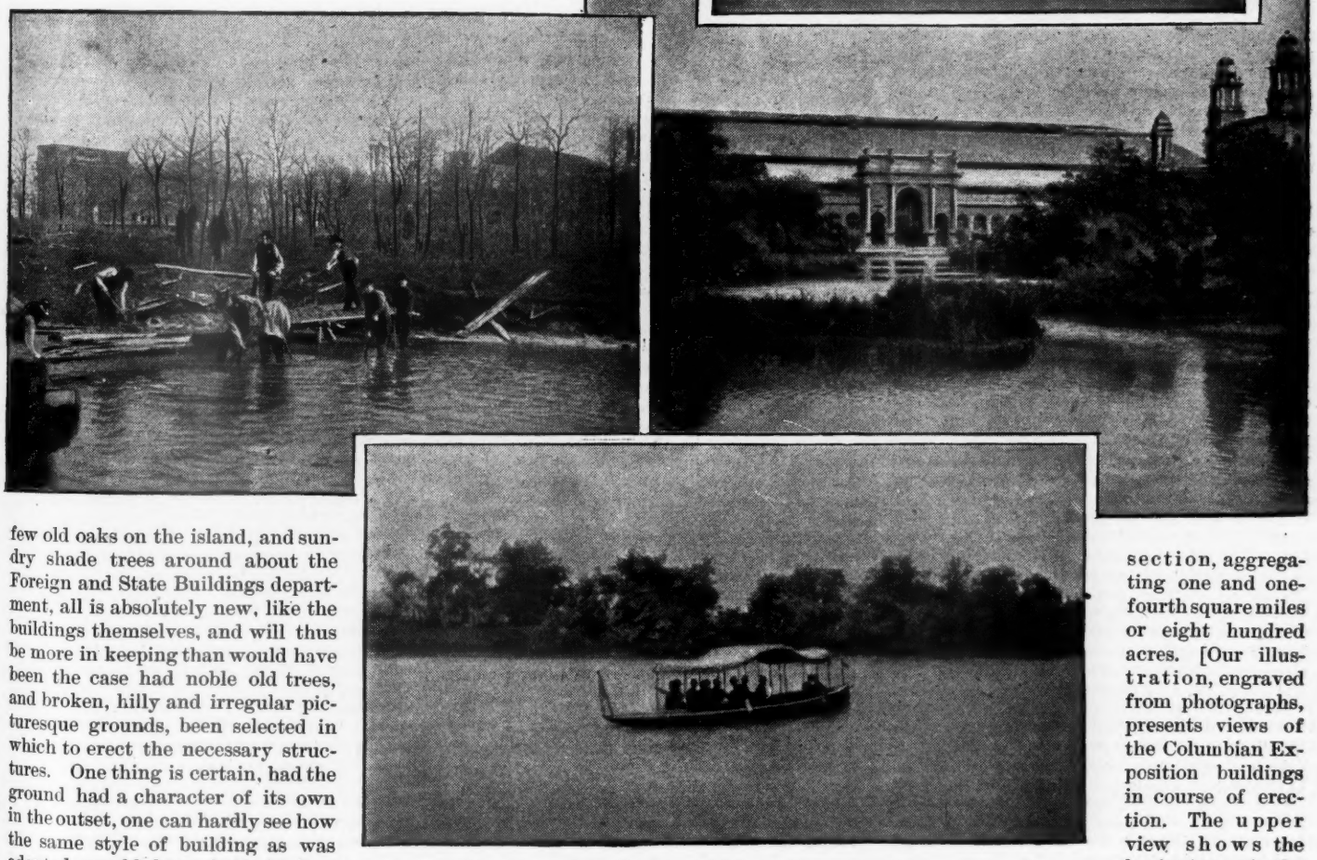
The Flat Pea starts very early in the spring, from eight to fourteen days earlier than alfalfa, and gives to the farmer, after a long winter, a very early, and therefore a doubly welcome, green food. The plant has a great ability to resist frost; in fact, the cold cannot get a hold upon it, and it grows on after hard frosts. Last winter, under a foot of snow, growing shoots, of a milk-white and wax-yellow color, were found from four to six inches in length. The plant lives to a great age, in common with the other species of vetch. Huntsmen and foresters know of plants which are many years old, and near Stettin, on the Baltic Sea, there is a *Lathyrus silvestris* plant which is known to be sixty years old. In general, the Flat Pea lives longer than alfalfa, or esparsette, and furnishes more and better food than alfalfa, or red clover. The plant reaches its full development the third year. Agriculture has won in the Flat Pea a fodder plant for a poor soil, in mountainous countries, or for dry and sandy areas, which furnishes a large quantity of highly valuable nitrogenous food, and forms a good permanent sod.

THE BUILDING OF THE WHITE CITY.

EDGAR SANDERS.

Were it not for the glimpses fixed by the camera, the wondrous changes that have taken place during the preparation of the Columbian Exposition would be lost to all those not fortunate enough to be frequent visitors, during the period of transformation. Dreary indeed was the spot, when the huge dredging machines and other appliances were transferring from the lakes and lagoons hundreds of thousands of cubic yards of almost pure sand, to form the foundation on which The White City now stands. After this leveling had sufficiently progressed, came the men to form the boundaries of the many miles of lagoons, preparing the same for the home of various kinds of water loving plants, on the island itself, or on the solid masonry work of the outer wall, as it appears to the eye. In mid-winter, when, without a leaf on the few scattered trees to relieve the landscape, the first pile of lumber began to assume shape—as may be seen in the engraving—all was crude compared with almost the identical view taken in summer when the thirty-two acres for the Manufacturers' building had been practically completed. The summer leafage on the island, and the little islets by which it is surrounded, as can easily be seen, were transformed almost by magic, a desert into a paradise. Those who have had the good fortune to see this wonderful whole grow, as it were, out of nothingness, may, perhaps, not be in a position to appreciate it complete, as will those who see it for the first time in all its glory. And glorious, indeed, is The White City by the inland lake, which is the focus for all the railways of North America. Around the learning and wealth, and limitless ambition of Chicago, the artists of America have gathered, and have concentrated in the beautiful Columbian buildings the art of all the world. Chicago gave the impulse, and summoned the spirits of architecture, sculpture, painting and landscape gardening. There is so much to attract attention, that an idea of many of the finer bits of landscape-making and of the transformations that have taken place, may be interesting. Perhaps it will really be a happy coincidence that, except the few old oaks on the island, and sundry shade trees around about the Foreign and State Buildings department, all is absolutely new, like the buildings themselves, and will thus be more in keeping than would have been the case had noble old trees, and broken, hilly and irregular picturesque grounds, been selected in which to erect the necessary structures. One thing is certain, had the ground had a character of its own in the outset, one can hardly see how the same style of building as was adopted would have been in harmony. While, as the case stands, the monster buildings in all directions are really the dominant features, and the green setting, whether of trees, shrubs, plants or velvety lawns, is nothing more than a dressing for the picture as a whole. All, as it were, is temporary, to suit the purpose; first, buildings in which the exhibits are well housed; second, space enough for the crowds to breathe, and pass from one to another of the buildings; and third, the necessary space so arranged as to aid in the general effect. The land covers a fourth more than would a farm of a full section, aggregating one and one-fourth square miles or eight hundred acres. [Our illustration, engraved from photographs, presents views of the Columbian Exposition buildings in course of erection. The upper view shows the beginning of the Manufacturers' building, and beneath are its completed form and surroundings. On the left, men are forming the banks of the lagoon, which now appear as seen in the lower view, bordered with trees and shrubs.]





TRANSFORMATION OF THE COLUMBIAN FAIR GROUNDS.

HOUSEHOLD

A Famous Woman.

ANNIE L. HANNAH.

Of all the rhymers of verse, or singers of songs there is not one more frequently quoted, or one of whom so little is generally known, as "Mother Goose," but this is not a mythical name conjured up as an appropriate sobriquet for an imaginary compiler of nursery jingles. but a veritable woman, Elizabeth Foster, second wife of Isaac Goose.

In "The First Settlers of New England," is this record: "Isaac Goose, (or Vergoose) Boston," then follows the brief mention of his marriage, the birth of ten children, the death of his wife, and his second marriage two years later, to "Elizabeth Foster, perhaps the daughter of William, of Charlestown, Mass." The names of six more children follow, then the simple record of the death of Isaac in 1710, aged 73.

If ever a woman needed a fund of entertaining nonsense it was this Dame Goose, for many of the children to whom she had come to be a mother, must have been of tender years, as their own mother died at the age of 42; and then as six of her own were added, she must indeed have been taxed to find amusement for them. We can almost see her with her brood clustered about her knee begging for stories, as the little broods of to-day cluster and beg; but what mother before her time was ever so abundantly able to meet the demand, and where do the mothers of to-day fly for help on such occasions but to this storehouse left so lavishly supplied for their needs by Mother Goose. She drew, of course, largely upon her memory, for the jingles, many of them, were obviously transported from the mother country, but surely she must have composed many of them to suit various exigencies constantly arising; "and is it to be wondered," it has been pertinently asked, "that she poured forth her feelings in the celebrated lines,

"There was an old woman who lived in a shoe,
She had so many children, she didn't know what to do."

But no eyes would have opened wider than her's, none would have met with more incredulity a hint that after nearly a century and three-quarters, her name would still be a household word. No, Dame Goose had no thought of fame, no time amid the multiplicity of her cares for such wild imaginings, and it was through no agency of hers that you mothers are blessed as you are.

As time passed the children grew and went into the world, and finally Madam Goose was left in the empty nest alone. Then it was that she took flight, and went to live with a daughter who had married a printer, one Thomas Fleet. With the habit of a lifetime strong upon her, she proceeded to devote herself to her grandchildren, singing to them the songs and ditties upon which her own and her adopted children had been nurtured, to the delight, doubtless, of the babies, but to the great annoyance of their father, who, being a man entirely devoid of any regard for the feelings of others, expressed without reserve his opinion of his mother-in-law's musical abilities, and strove, by every means in his power, to silence her. But all unknown to herself, Dame Goose had a mission in the world, and, "building better than she knew," refused to be silenced.

Thomas Fleet, fertile in expedient, determined to make the best of a bad matter, and to turn this ill wind to pecuniary account. Accordingly he set about taking down the rhymes as they fell from the good grandmother's lips, and finally collected enough to fill a book which he straightway printed, and, still smarting under his defeated attempts at silencing the singer, vented his ire, and soothed his vindictive heart by sending it forth under the title of "Songs for the Nursery; or, Mother Goose's Melodies for Children. Printed by T. Fleet, at his Printing-house, Pudding Lane, 1719. Price two coppers." This scanty record is all that can be gleaned of the history of this undoubtedly "Famous Woman;" and well it is for the generations which have come after her that her not-too-amiable son-in-law was endowed with so keen a business faculty, for otherwise "Mother Goose's Melodies" would be now in oblivion, "And what would poor mothers do then?"

The Care of Mothers.

MRS. E. H. LELAND.

A great deal is written, year in and year out, on the care of infants, house plants, young turkeys, and the like; but one never sees any special chapters on the care of mothers. And this is a singular state of things; for, although we may have quantities of infants, house plants and young turkeys, God gives us individually—and for only once in a life-time—a mother! Yet how complacently some of us ignore this great fact—or completely forget it, just as we forget the blessings of pure cold water, the life-giving sunlight, or the luxury of comfortable breathing! Every editor in the world who has a department for "home" reading ought to publish a little lecture once or twice a year on this subject, so that the care of mothers may be kept in mind. I am not sure but it would be a capital idea to hold a Mother-Fair once in a while, and give a blue ribbon and a purse of gold to the son or daughter exhibiting the best cared for mother. Here would be a field for sweet competition. And if the awarding committee should be puzzled how to bestow the prizes among so many deserving competitors, we may be sure the good Lord himself would be saving up rewards, richer than ribbons and gold, for every blessed one of them.

Do we ever think how endless is mother's work—if she belongs to that vast class who take care of their own homes? Editors, teachers, clerks, merchants, bankers, and even sewing-women, have their rests, their open-air walks or drives to and from work, and their evenings and Sundays for change and recreation. But the home-mother's evenings and Sundays are usually fully occupied. Her work is of a sort that will not permit her to turn the key upon it, and stroll away with her hands in her pockets—so to speak. Her work is often of the fifteen-hour sort, and the fact that she has not in all these centuries "struck" for shorter hours, shows that there is something in home and love that is going to hold this old world together, fast and strong, for some time to come.

Yet somebody should care for this busy mother—who is too busy to care for herself—and see that willing helps and glad little joys spring up along her way. Big boy and big girl, listen to me! Do not imagine that because mother has been working for you all these years, and making no fuss about it, that she would not like an old time girlish play-spell, or a genuine loafing rest-time, if it could be brought about. Because she is "just mother" and perfectly used to her confined and unrecreated life, don't fancy that she would not appreciate a month at some quiet and cool little "beach," a camp-out in the mountains, or a visit to some old friend. Or, to narrow right down to the present moment, do not believe she would not enjoy staying in bed of a morning once in a while and hearing somebody else grinding the coffee and getting up a good breakfast, just as she used to sometimes in her girl days. Do not believe she would not enjoy a half-hour afternoon nap on some of the "hard" days, if she could be convinced that the bread would not run over and the cat would not be shut up in the pantry.

Mind the *little* helps, the little ounces of prevention *so* much pleasanter to take than pounds of cure! Do not wait until mother "breaks down" beneath her endless little burdens, and then weep and wail and set up a fine monument expressive of your love for her. Big boy and big girl, take care of mother *to-day*, and she won't break down to-morrow!

The Care of a Sewing Machine.

KATE BEVERLEY.

A good sewing machine is indispensable to every well-appointed household. Such a labor-saving invention is of inestimable value, and for this reason it should receive the very best of care. Contrary to the general idea, it is kept in good condition by being used frequently and intelligently, for, if it is allowed to remain idle and unused for any length of time, it is apt to become extremely dusty and clogged with dirt.

If this should occur, the oil can should be filled with kerosene, which should be freely inserted into all the parts of the mechanism which have friction, after which the machine should be worked gently for five or six minutes, the kerosene being very carefully wiped away by means of some soft, clean old cloths. Then precisely the same course should be taken with the best quality of machine oil, and the machine should be persistently and patiently worked until it runs smoothly and evenly. In order to thoroughly cleanse a machine, its construction should be fully understood, so that it could be taken apart, each bit of mechanism being well wiped and freed from all dust and dirt, then carefully readjusted. It should be properly dusted every day, and when not in use it should invariably be kept covered.

Laundering Lace Curtains.

EDNA LEE.

Clear white and cream, or ecru curtains must be washed separately, to get the best results. Shake out the dust thoroughly, and put in a warm, strong suds, made of pearline, or any good laundry soap, and soft water, laying in first those that are the least soiled. If they are old and tender, pat and squeeze carefully with the hands, but if strong they can be rubbed lightly on the board. Tears should be carefully darned before wetting the articles. Holes may be neatly mended by appliqueing under them bits of blond lace, using very fine white thread. Now run the curtains through the wringer into clean water, changing this and repeating the wringing several times, until clear; put all in a pillow case, or muslin bag, and scald in clean, hot suds. Be particular to use soft water throughout, or to soften the water with ammonia, or borax, as hard water contains lime, which yellows and shrinks the thread. If you wish them white, blue in two waters, and use a little blue, also, in the thin, clear starch. If they are to be cream or ecru, get some yellow ochre, which dissolves readily in warm water, and add a little of it to the starch, to give the desired tinge. After starching, run them several times through the wringer, to get them as dry as possible. Tack a couple of sheets securely and smoothly to the floor of an unused room, and pin your curtains down carefully to the sheets, putting a pin through each scallop, and seeing that they are absolutely without crease or wrinkle. Two curtains of the same size may be pinned one on top of the other. If the weather be mild, open doors and windows, and the curtains will dry in a single night.

Towels.

EVA MARIE KENNEDY.

Every household should always be kept well supplied with an unlimited quantity of good, generous sized towels of all kinds for the bedroom, bathroom and kitchen. In choosing towels, select the material that will most readily absorb water, and perhaps nothing could be better recommended for this purpose than the huckaback towels; besides, the slight friction which they cause will give a healthful glow and pleasant sensation to the skin. But one's range is by no means limited in this matter; there are bedroom towels of all qualities, styles and colors. They may be had fringed, hemstitched, or they may be bought by the yard at any price, and made at home. For general purposes, bedroom towels should not be too elaborate, but should be selected with due regard to durability. However, those towels which, are not in common and constant use may be much finer, being composed oftentimes of silky damask; these should have the owner's monogram or single initial neatly embroidered on one end. If the washstands are not provided with towel rails (and so many are, unfortunately, quite deficient in this respect) a special bracket should be supplied for the purpose, which may look quite as ornamental, and will be useful and convenient.

One should never be guilty of buying a small bath towel; it is a wretched, unsatisfactory affair. Better err in going to the other extreme. There are very many different varieties of bath towels to be had in the market at the present day, but nothing can excel the old-fashioned Turkish towels, which are now manufactured in gay and festive colors, such as pale blue and pink; white, however, is always preferable. These have many advantages over other kinds of towels, being inexpensive, and so within the reach of all. They will

also absorb water more quickly than any other towel, are soft, and yet cause a slight friction.

Kitchen towels should indeed be unlimited in quantity and variety. Separate towels should be kept for glassware, silver, and the fine china, and nothing can be better for this purpose than what is termed glass toweling, consisting of plaid or checked linen. The regular kitchen towel should not be too coarse, as it will never readily become soft and pliable; fine Russian crash or Lanark toweling, will be found to be the best and the most serviceable. Besides these two kinds of towels, there should be kept on hand some stove and oven cloths, of dark-colored, twilled, cotton crash. Every kitchen or pantry should contain a clean hand cloth, which, for convenience sake, should be made in the form of a roller, and adjusted in the usual manner. The most suitable material for this roller is twilled crash, of cotton and linen, mixed.

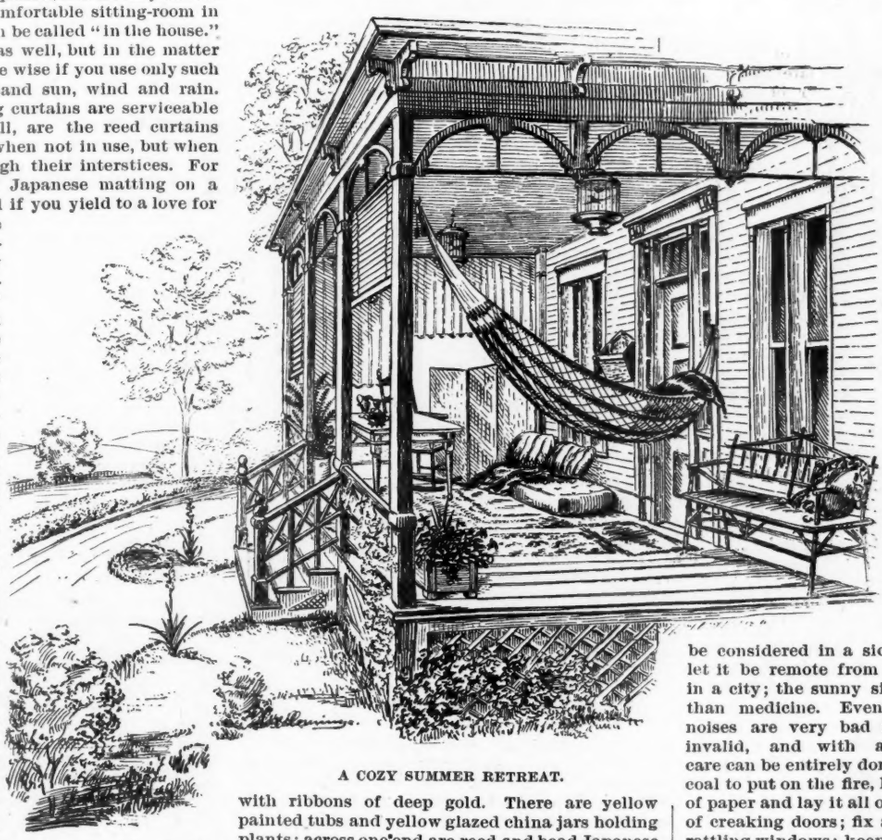
The Piazza Parlor.

ALICE CHITTENDEN.

Where there is a wide piazza, it is an easy matter to make it the most comfortable sitting-room in the house, if a piazza can be called "in the house." It can be made pretty, as well, but in the matter of decoration you will be wise if you use only such commodities as will stand sun, wind and rain. The gay striped awning curtains are serviceable and pretty; better, still, are the reed curtains which not only roll up when not in use, but when down, let the air through their interstices. For screens, nail strips of Japanese matting on a clothes horse frame, and if you yield to a love for ornament, and paint the panels in flaming nasturtiums or feathery golden rod, you must remember to take it in o' nights, so perhaps you will conclude it to be the best policy to have real nasturtiums, ferns and palms in rustic jardinières. For floor cushions, there are those made of India rubber, which are not pretty, I grant you, but can be covered with denim, or Turkey red, or bandana handkerchiefs. A bamboo couch may have cushions of feathers, down, or hair covered with gay cheesecloth, or silkaline, because the couch rug that will form a part of the furniture of this cosy nook can be thrown over to protect them from the weather. In a shady corner place a large flower pot, and fill it with leaf mold from the woods, and plant therein roots of ferns as early in the season as possible. Later in the season tall, graceful, feathery fronds will whisper to you of the cool depths of the woods. In one or more blue-gray crocks plant nasturtium seeds; stand them by one of the uprights of the piazza, and in due time a riotous mass of gay blossoms will nod and smile at you when you take your daily half hour's rest. Your jardinières need cost you very little. Starch boxes braced at the corners with strips of tin and painted a good brown, will serve to hold vines and blooming plants along the edge of the piazza floor. Yellow is also a good color to paint these.

Floor rugs you will want, even in summer, because, with a heavy rug and a floor cushion, one is quite independent of a couch; but you need nothing better than rag rugs, which can be made as gay as you please, and if woven from rags of good woolen materials, will not fade unduly. And then the hammock. One must not forget this important element in the comfort of an out of door parlor. Get one of the gay striped Mexican hammocks. They cost a little more at first, but they last indefinitely and look so pretty filled with bright pillows. A table is a necessity, but an inexpensive contrivance, or any discarded table from the house can be hidden under a cloth of the ever-ready and artistic denim, which comes fresher and more artistic each time from the laundress' hands if its only ornamentation be embroidery in white linen floss and a white fringe. Enamel the oldest rocker, the house affords, a bright red and cushion it, if it need cushions, with the pale side of blue denim. A wall pocket of matting for holding newspapers and magazines may be hung against the side of the house, and some ladies go so far as to hang a few simple etchings, or photogravures against the clapboards. This, however, is an unnecessary attempt to "paint the lily," for if you live in the country, as you presumably do if you have a wide piazza, Nature paints for you finer pictures than the hand of man can produce.

However, there are piazza parlors even in great cities. In up-town New York, where one can get glimpses of the beautiful "American Rhine," the Hudson, there is a house painted a cool, pale green with dark green shutters and trimmings. It is not a modern house. There is an air of hospitality and solidity and comfort about it that too many modern houses lack in the universal striving after effect. The broad, square piazza is larger than many a city parlor. The windows which open upon this veranda have curtains looped back with ribbons of deep gold. There are yellow painted tubs and yellow glazed china jars holding plants; across one end are reed and bead Japanese curtains, and across the other yellow striped awnings; the floor is striped green and white, and the chairs and tables are green, with yellow cushions and covers. For such a piazza as this, where liability to the depredations of the wandering city gamin make it necessary to place within doors at night such movable articles as might be carried off, and which, therefore, are not exposed to the weather, there are a number of effective materials that can be used. Brown and gray linen make good and harmonious cushion covers. A pillow in heavy gray can be embroidered in a wild rose design, and one of brown, in black-eyed Susans, done in yellow, with black centers.



A COZY SUMMER RETREAT.

Dull blue and old red linen, plain or embroidered, make charming hammock pillow covers. All covers should be of the "slip" variety, either buttoned on at one end, or laced with a heavy cord through eyelets worked at either side of the open end. On a shady side of this open-air nook, build your rockery and plant it with native ferns and wild flowers, and you will have the nearest approach to a paradise that this earth can afford.

Words of Warning.

Housekeepers cannot be too strongly warned against letting any canned goods remain in the tin cans after they are opened. Some chemical action occurs when the acid of the fruit or vegetable comes in contact with the air that makes the contents in many cases poisonous. Tomatoes and acid fruits are particularly dangerous after having stood in the can, and even soups and such vegetables as peas, corn, and asparagus, should be opened an hour or two before dinner and turned out at once into earthenware. A whole family were lately poisoned from eating sardines that had been allowed to remain in the can, and this from no low grade of goods either, the can being bright and new. Another caution, that is timely, is in regard to lemon and orange rind. Only the cleanest and brightest rinds should be grated, and these not until after they have been well washed. Never use a rind that is covered with tiny black scale-like spots.

In the Sick Room.

SARA H. HENTON.

There are very few men or women upon whom will not devolve at some time in their lives the care of the sick. The best intentions and the kindest and tenderest heart may utterly lack the elements of a good nurse. It is a great mistake to suppose that all good women make good nurses. One of the best men and dearest of husbands I ever knew was the poorest nurse. In fact, his wife often said it was worth her life to be taken suddenly ill in the night and call him up to relieve her. The first attempt would be to light a coal oil lamp, and that was a terror, because he would break the chimney and upset the lamp, which might burn the house down. If she wanted to take medicine in a spoon or wine glass, the bed was generally deluged with water before he would get through. Thus it is with many lovely men and women; they are kind and gentle to their loved ones, but cannot nurse them when sick. The first thing to be considered in a sick room is, if possible, to let it be remote from street noises, if you live in a city; the sunny side of the house is better than medicine. Even slight and unimportant noises are very bad for a sensitive, nervous invalid, and with a little forethought and care can be entirely done away with. If you have coal to put on the fire, have it wrapped in a piece of paper and lay it all on together. Oil the hinges of creaking doors; fix a wooden stick, or peg, in rattling windows; keep rocking chairs out of the room, and never whisper in your sick friend's room. The first and greatest requisite is fresh air, and this can only come from the outside. Opening a transom, or door, does not provide pure air from outdoors. A screen is valuable in a sick room to place in front of an opening door, to keep out drafts, sunlight, or firelight, from the face, or eyes. Let the room be as cheerful looking as possible. Growing plants are better than cut flowers. Keep all medicine bottles out of sight; all bedding should be frequently renewed. If you have ever been sick long, you know how painful certain details of the furnishing in a room becomes to you—it is well to bring in a new picture or remove one from the parlor; it affords such relief. Always serve the food in as attractive and dainty a form as possible. If not fine, the dishes can be scrupulously clean. The patient should have no responsibility about the taking of medicine, or the preparation of food, but should be spared all possible anxiety.

Summer's Fragrance.

All through the winter you may have the fragrance of woods and fields about you if you will take the trouble to gather it during the summer months. This will be a delightful task for the

children. Send them out with little baskets during the month of July to pick clover blooms from the road side and pastures. Dry them on the garret floor, turning them over daily until cured. Rose leaves, especially those of the wild rose that blooms so abundantly in the hedges, and lemon verbena are also excellent, as well as bay leaves, sweet fern, wild thyme, and the young shoots of sassafras. These when dried should be mixed with common salt to keep out worms; add a few pot pourri spices, pack between layers of wool and into pillows.

The Rose Dress.

CONSTANCE B. WHITE.

The stylish dress design shown in the accompanying illustrations is suitable for fine sheer nainsook combined with handsome embroidery, and

FIG. 1. FRONT OF DRESS.

finished with feather stitching. It forms a simple yet elegant gown, suitable for all dressy occasions. The waist proper is plain, and fits the figure snugly, but is not tight. The yoke is composed of alternate rows of fine tucks and feather stitching, made in a separate piece and afterward set in, cutting out the plain waist under it, so it will be as transparent as possible. After the yoke is completed, sew a band of fine embroidery across the bottom of it, and at the bottom of the embroidery place a puff of nainsook. The ruffles over the shoulders are of embroidered edging, five inches wide at the top and sloping to a point at the waist line. The neck and sleeves are finished with narrow ruffles of embroidery. The back shown in Fig. 2 and front seen in Fig. 1 are alike, with the

FIG. 2. BACK OF DRESS.

exception of the opening in the back, which is faced with a band of nainsook in place of the usual hem. The sleeves are quite full, and gathered on a feather stitch band of insertion before adding the ruffle. The belt is of embroidered insertion. The skirt is made of three full widths of the material, joined together with a double or French seam. The bottom is finished with a ruffle of fine embroidery, then a row of feather stitching, four small tucks, a band of embroidered insertion, repeating each, as shown in the illustration.

Wheat Sachet.

When the wheat fields take on their harvest dress of gold, gather a handful of handsome heads with stalks about eight inches long, and tie them

AN ATTRACTIVE SACHET.

about a pointed roll of scented cotton. Weave baby ribbon in and out through the straws and tie up with bows and ends of the same, fastening loops and ends at either end of the roll, as shown in the sketch. Light green is, perhaps, the prettiest color, but pale blue, or pink, may also be used. It is to be hung beside the bureau, and is a very attractive and quick selling article for fairs.

Steamer Pillow.

The friend who is going on a voyage likes to carry with him, as we like to give, some little token of our handiwork. Perhaps there is nothing more appropriate or useful than a steamer pillow. The illustration shows a cushion for the back of a chair and a round head rest combined. Its dimensions must be in accordance with those of the chair. Cream pongee, worked with wash silk floss in old red, blue, or gold, is always handsome. For a blonde young

STEAMER PILLOW.

lady, pale blue linen, or pale green India silk, would be pretty, while one in dark red silk would be most becoming to a brunette. It may be finished with a double frill of the material, and the words "Bon Voyage" worked in contrasting silks.

Umbrella Case.

A case for umbrellas, combining neatness and usefulness in an unusual degree, is shown in our illustration. Get a thick wooden walking stick, which may be purchased for ten cents, or cut from the woods, and polished. Use a piece of cloth twenty-five inches long and about five inches wide, varying with the thickness of the umbrellas when rolled up, and with that of the stick. Slope it to about four inches at the bottom; seam up, and then with the machine stitch through the middle two rows, making a space in which the stick will fit snugly. The pockets on either side will hold the umbrellas. Bind at the top with braid, and finish at the bottom with rings, such as are used on the silk cases in which umbrellas are sold. For a gentleman, the middle pocket might be fitted to his walking stick, and all three be strapped up with shawls and rugs without danger of their being dropped out and lost, if tied tightly with ends of braid attached to the pockets. Waterproof cloth or brown denim are the most suitable materials.

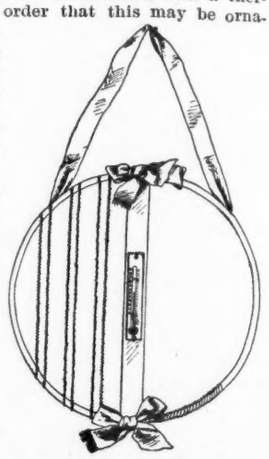
To Ebonize Wood.

Boil a quarter of a pound of logwood chips in a pint of water for one hour; while still hot, brush the solution over the wood to be ebonized. When dry, give a second coat, and when this is dry apply one coat of a solution of half an ounce of green copperas in a pint of hot water. This gives an excellent black, and wood so ebonized can be polished or oiled, and is far superior to that treated with varnish, which is liable to chip.

Thermometer Frame.

DORCAS EYELET.

Every room should be furnished with a thermometer and in order that this may be ornamental as well as useful, procure a small hoop six inches in diameter; wind closely with tinsel, and across the middle from top to bottom tack a half-inch ribbon, adding a small bow at each point of contact with the hoop. On the center of this ribbon tack a small thermometer which you must be sure to test before buying by placing your warm fingers on the bulb to see if the mercury rises. At the left of the thermometer stretch three rows of tinsel as shown in the illustration. Fasten ribbon at the top to hang it, by letting it rest perfectly flat against the wall. A rectangular strip of birch bark with a thermometer tacked in the middle and a bow of orange, or deep red, or golden brown ribbon at the top is also pretty. The ribbons should harmonize with the furnishings of the room, but these colors contrast prettily with the color of the bark. Another odd way to mount a thermometer is to fasten one in the center of a piece of weather beaten shingle that has taken on artistic tints with age. Above and below letter with sepia, "I'm forty years old and never saw such weather before." Put a screw eye in the top and hang against the side of a room away from drafts.



ORNAMENTED FRAME FOR A THERMOMETER.

Perfumed Handkerchief Case.

A present sure to be appreciated is a fragrant, folding handkerchief case. For those who can paint or embroider, many beautiful designs are

HANDKERCHIEF CASE.

shown, but the inartistic seldom find one adapted to their needs. The design in the accompanying sketch may prove helpful to the latter class, as it calls for nothing but neat needle work and fresh pretty materials.

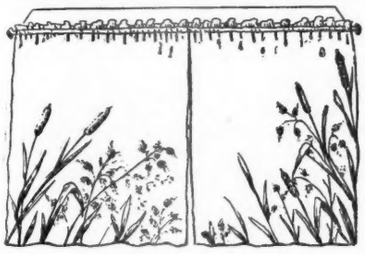
To make the case, procure a quarter of a yard of pretty figured fancy silk, 21 inches wide, the same quantity of plain lining-satin of some delicate harmonizing shade, two layers of fine sheet wadding, a little sachet powder, a yard and a quarter of narrow valenciennes lace, and three-quarters of a yard of narrow ribbon.

One layer of perfumed wadding and the lining are finely quilted together, then the other layer of wadding and the silk cover are laid smoothly over it, and folded over, from end to end, three times, the last fold, which forms the outside flap, being only three-fourths as wide as the other three. Our sketch shows how the flap is shaped, and how the other end of the case is narrowed a little to show a bit of the pretty quilted lining at each side; also how it is edged with the slightly fulled lace, which does not border the concealed

inner fold. Hooks and silk loops furnish the fastenings. The hooks are slipped in under the edge of the lining, leaving only the tips in sight, one at each corner of the flap and one beneath the bow. Powdered orris root, with a drop or two of oil of rose, makes a nice perfume for a case decorated with roses. Heliotrope powder, as prepared by good druggists, is very sweet, delicate and lasting.

Mantel Curtains.

After the stove has been taken down, the mantel and the space under it presents anything but an



PRETTY MANTEL CURTAIN.

attractive appearance. The old-time "fireboards" do not suit this esthetic age, and housekeepers look for some new device. A very pretty one is shown in our illustration. Make two curtains of ecru or tan colored sateen, Gobelin cloth, or any of the new art linens that wash so beautifully and may be so effectively treated with paints or embroidery. A design of cat-tails and meadow grasses is particularly pleasing. Shirr the curtain on a small brass rod. Another delightful way of treating this space is to stand a large mirror flat against the wall, and in front of this a box of growing ferns. Still another way is to build a seat all across the jamb, upholster it with material to match the furnishings of the room, and place a couple of big pillows, one at either end, and two across the back, standing against the wall. The seat must be broad and rather low.

Lamp Mat.

Cut a circular piece of felt, blue, golden brown or dark red, to harmonize with the furnishings of your room. Scallop the edge, using a thimble or

CIRCULAR LAMP MAT.

small spool for a guide, button-hole with silk of a darker shade, and work with daisies in heavy white silk. For the dining table or for a mat under a lamp used to read or sew by, use heavy white linen, as white reflects the light.

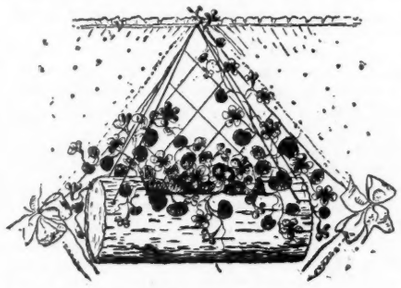
Easy Steps and Stairs.

JOEL W. SMITH, M. D.

Few people realize the difference in steps and stairs; some are always called "hard," while others are so easy that one hardly realizes that going up them is any effort. Where there is plenty of distance, all stairs and steps can be made "easy," and steep stairs are dangerous. The easiest steps have "risers" five to seven inches high, with "treads" twelve to fifteen inches broad. Stair treads cannot usually be made so wide in most houses, as the distance —"run"—is too short, but they ought to approximate it as nearly as possible. Ignorance and the attempt to save material and work often spoil a flight of stairs. One of the worst and most common effects of bad stairs and steps is to impair and ruin the health of many women who use them. In my forty years of professional experience and observation, I have met numbers of broken down women chiefly from this cause; some of them incurable, but how easily and cheaply it could have been prevented! Churches, school houses, and other public buildings, also frequently have bad steps and stairways.

For The Piazza.

In summer, it is not enough that the house should be decorated, the piazza must be made beautiful also. A charming little ornament for holding growing vines can be made from a long tin box, such as ginger-snaps come in. Put on the cover and hammer it down securely all around; with a can-opener cut a square opening in the top. Punch holes in the bottom for drainage, and in the top for wires by which to suspend it. Cover with bark glued or sewed on, fill with earth and plant with nasturtium seeds, and you will be soon repaid for your slight trouble. They are equally pretty for hanging in the house in a sunny window in winter. Larger logs for standing on the piazza steps or about the grounds may be made by taking two

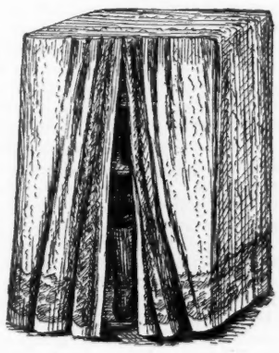


PRETTY HANGING BASKET.

rounds sawed from a log for the ends. On this have a tinsmith tack the tin. The bark also may be nailed on.

Draped Boot and Shoe Box.

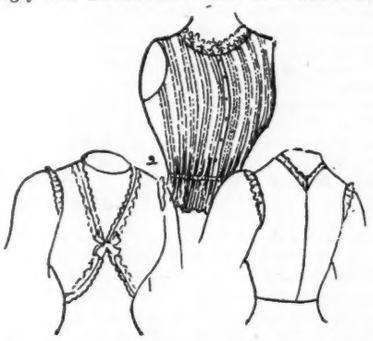
Though there is nothing new in the idea of a draped dry-goods box with inner shelves, yet the one herewith represented is draped in a simple, graceful manner, and is certainly very convenient. Where closets are scarce, and boots, slippers, shoes, and rubbers have to be tucked away here and there, or left lying about, a box of this kind is almost a necessity, and it takes but a short time to prepare one. The model was made to supply such a need. The box selected was about the height of a lamp-stand, thirty-three inches, and the top eighteen by twenty-one inches; two shelves were slipped in, to rest on cleats tacked on each side, and the lower part was left high enough to admit rubber boots. Then a pretty red and olive tablecloth, nearly two and one-half yards long, was used to cover and drape the box. The cloth was arranged so that the border resembled a band of trimming along the bottom of the folds, and so full just in front that the folds fell straight to the floor, completely hiding the inside. They never parted of themselves, but could be



CONVENIENT SHOE BOX.

thrown aside out of the way in an instant. In our illustration the curtains are drawn apart, to disclose the inner shelves. Such a cover remains clean a long time, but may be readily removed for cleansing by drawing out a few tacks. The top, which is slightly padded, makes a convenient stand for a lamp or the work basket. A similar box would make a commode, or a magazine case.

The box described was found so convenient that another one was made for the exclusive use of the men. A wider box was chosen, which would fit snugly into an obscure corner or a small entry

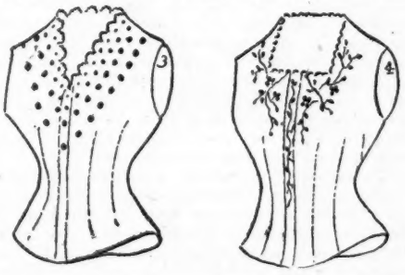


FIGS. 1 & 2. NEW DESIGNS FOR CORSET COVERS.

way, usually littered with boots, overshoes and slippers. The cover was a square, red tablecloth, which, as it could be used whole, was not injured for other uses. It was spread smoothly over the top, with nearly all of the cloth falling in front; beginning at the middle of the front edge, it was gathered up into straight folds, which were tacked to the middle of the box at the top, thus producing divided front curtains, so full at the middle as to make the parting invisible. All of the cloth not needed was allowed to fall at the back side, where a few tacks held it securely. As it stood in the entry, the sides of the box were not seen, but in an exposed position the sides would have to be stained or painted.

Corset Covers.

Neat and pretty corset covers are a necessity when thin dresses come to be worn. Fig. 2 shows a particularly dainty one for this purpose. It is made of nainsook tucking, fitted to the neck and shoulders, and fastened about the waist with a shirr string, which is to be let out when laundered. It is fitted so snugly under the arms that



FIGS. 3 & 4. HAND-EMBROIDERED CORSET COVERS.

there is very little fulness at the belt line. Three-quarters of a yard will be required for the length, but the width of the ready-made tucking will be sufficient for two if you use plain goods for the back and under the arms. Fig. 1 can be made from the ordinary pattern, simply giving it the jacket effect. Figs. 3 and 4 are also made with this pattern, the embroidery being done by hand, although lace and Hamburg embroidery are both used in this Pompadour style. The dotted pattern is very pretty worked with pink silk and button-holed with the same.

To Preserve Leather.

Brown leather satchels, book bindings or shoes that have grown shabby may be wonderfully restored by the use of brown shellac diluted with alcohol. Afterward keep it in order as long as possible by rubbing with vaseline, as too many coats of the shellac will stiffen the leather. This is the best way of treating the russet shoes, which are such light and comfortable summer wear for everyone, from the baby to the baby's papa and mamma. The habit of allowing young people to wear tennis shoes except on the tennis ground is a very injurious one, as they tend to unduly

broaden the foot and spoil the gait beside. The best and most economical wear shoes for general use are those of russet leather.

For the World's Fair Wear.

"What shall I wear to the World's Fair?" is the question that comes from all over the land this season, and traveling gowns are considered now as never before.

A trim, simply made wool dress for the journey is most desirable and one of dust color or beige shows soiling least, although many will still remain loyal to the old favorites, navy blue or gray. Light weight cloths, hop-sacking, cheviots, whipcords and poplinettes are all popular fabrics, which divide favor with the ever reliable English serges, and may be either plain or flecked, dotted or dashed, with color.

The so-called outing suit style, consisting of skirt, blouse and coat, is, undoubtedly, the most convenient fashion, as it can be adapted to all temperatures. An excellent model has a half-circle skirt, four yards wide at the foot, fitted by darts below the belt and clearing the ground by an inch. The hem and edges are stitched, but it is otherwise untrimmed and has no stiff interlining. The Eton jacket, with short, wide back and deeply pointed fronts, is turned back in revers, broadening out into a flaring collar that reaches over the shoulder-tops. The sleeves are moderate sized mutton-legs. With such a gown and several shirt waists of silk, cheviot, and silk gingham to wear with it, one is prepared for all kinds of weather, and for almost any out-door occasion; not extremely ceremonious.

Many women, however, advocate a smooth finished silk dress for traveling, as it so readily repels dust; and a new English make comes expressly for tourists in black and quiet, subdued tones, as well as the kind of black Japanese silk said to be waterproof. These should be made up in the severest tailor fashion, which is also the best form for cloth, when the outing suit is not desired, or is considered too youthful. The skirt may be as described above or sharply gored to flare slightly at the foot. The bodice is very short on the hips, and rarely more than two or three inches deep in the back and front, though, occasionally, postillion tails are seen. It may be either single or double breasted, often lapping over and buttoning straight down from shoulder to waist-line on the left side, without revers or any other trimmings. Coats and basques with a single or double breasted waist coat of honeycombed or dotted silk and wool vesting, which opens at the throat displaying a small linen chemisette and four-in-hand tie are also worn by tourists. Capes to match these suits are a comfortable addition but not positively necessary, if one be provided with a dust-and-rain cloak.

On a short trip to Chicago, all white petticoats and muslin garments that can be dispensed with, should be left at home, one depending on knitted cotton, light woolen, or silk underwear. Jewelry will prove only a burden and a temptation for the dishonest, while just here it may be well to quote a sensible woman who writes: "Let me tell you in friendly confidence, that if you want to be supposed aristocratic, wealthy, intellectual and in good form, you will dress with extreme simplicity. All the Old World dignitaries and social leaders will wear their oldest and simplest garments, and so will the New World millionaires. The gaudy gowns and the jewelry and general rainbow combinations will be exclusively used by recently arrived immigrants and ignorant people unused to society."

This does not mean you must not pack one pretty summer silk in your trunk, a frock with all the bewildering frills and ribbons that are denied the chic traveling suit; for that will surely be needed for Sundays and calling on friends, while it will prove a grateful change from the hack dress worn for real service. Two gowns, a wool and a silk, with perhaps the addition of a bedroom wrapper, and plenty of shirt waists should be sufficient for a week or two at the Columbian Exposition.

To turn to another perplexing question, it is now pretty generally conceded that the crinoline craze has attained its zenith and is on the wane, as well as the exaggerated fullness of dresses. The latest imported skirts do not measure more than four or four and a half yards around, and the interlining is merely of alpaca, crinoline, or muslin from 10 to 18 inches deep, or as high up as the trimming extends. Sleeves, however, retain their balloon-like proportions on all elaborate gowns, and bretelles and shoulder ruffles are as much seen as ever. For silken evening frocks a newer garniture than lace is silk muslin daintily scalloped and embroidered. It forms flounces at the foot of the skirt, and piece muslin is used for draping the bodice and for the huge sleeve puffs extending to the elbow.

Dalmatian belts of imitation silver and gilt wrought in open scroll patterns are a novelty in the girdle line. They are really only half-belts to be sewed on a satin ribbon which ties in front, but are most pretty and effective with airy gowns of grenadine and organdies. The parasols of white or pale tinted chiffon gauffered over silk and mounted on white enamelled sticks with Dresden handles, are exquisite with light summer toilettes, but are frailty itself, and the prudent girl will put her money into one of rich black lace, or handsome satin. Stylish sun umbrellas also have the fashionable Dresden handles, showing wee gay blossoms painted on white porcelain.

July Dainties.

Neat and tasteful sandwiches, which are so popular on the English tea table, will be found most acceptable on the home table for luncheon, or tea, especially in hot weather. A few hard boiled eggs make nice sandwiches. Chop the yolks of six eggs, and one of the whites, and mash to a paste, with a teaspoonful of melted butter, and one of anchovy paste; spread on thin slices of buttered bread, double, and trim into shape. Caviare, which may be bought at Italian and French groceries, and delicatessen stores, and is packed in little ounce jars, makes good hot weather sandwiches. Any kind of cheese, grated, or mashed to a paste, and spread on buttered bread, with, or without, the addition of cayenne pepper, makes appetizing sandwiches. Cottage cheese is nice, with a leaf of crisp lettuce laid over it before the top slice is put on.

Sweetbreads.—Lamb sweetbreads are almost as good as those of veal, and are infinitely cheaper. Soak them in cold water for several hours, changing the water twice; throw into boiling water, and let them simmer five minutes after the boiling point is reached, then fry, and serve around a mound of green peas, or asparagus tips. They are nice also with brown or tomato sauce.

Roasting a Leg of Lamb.—However epicurean rare mutton may be, rare lamb is as unedible as rare broiled chicken. A leg weighing six pounds should be roasted an hour and a half in a good oven. Lay the meat on a rack in the dripping pan and baste every fifteen minutes. Do not remove the fat before roasting, but wrap it around, and skewer it fast.

Julienne Soup.—There is no better spring or summer soup. It is very simply made by adding a cupful of finely shredded vegetables, cooked tender, to a quart of any light broth. Simmer ten minutes, and serve. Young carrots, turnips, radishes, string beans, peas, asparagus tips, and minced lettuce, parsley, and chives, all go to make the complete Julienne.

Lamb Chops.—An unusual way of cooking these is as follows: Broil them for two minutes, then spread over them a forcemeat made of uncooked chicken meat, pounded to a paste, with the same bulk of bread previously soaked in milk. To a half-pint of this mixture add a beaten egg, salt, pepper, and a little melted butter, and moisten with a tablespoonful of cream, chicken gravy, or white stock. Cover the chops on both sides with this, and lay them in a hot oven for six minutes, turning them once. Chopped mushrooms are often added to this forcemeat, or the chops, prepared as above, may be served with a mushroom sauce.

Clam Chowder.—An appetizing chowder is always in order in hot weather. The best chowder maker we have ever known was an old Massachusetts lady. The following is her recipe: Wash twenty-five large clams, and put over the fire with half a pint of water; as soon as the shells open, remove the saucepan, take out the clams, and save all the juice remaining in the shells. Remove the tough parts, and chop the rest. Peel and slice six potatoes and two onions, add a small slice of larding pork, six pilot biscuit, the clam juice, a pint each of milk and water, half a grated nutmeg, and a teaspoonful of celery seed, or a couple of stalks of celery minced fine; let this cook slowly for two hours, then add the chopped clams, a cupful of tomato sauce, and a teaspoonful of Worcestershire sauce, and when the chowder is again brought to the boil, it is ready to serve.

New Potatoes.—One rarely eats new potatoes at their best in the city, because they should be cooked as soon as possible after being taken from the earth. Hashed with cream, they are a dish to make glad the soul of an epicure. Mince a quart of cold boiled potatoes, season them, and add a gill of milk or cream; melt a tablespoonful of butter in a frying pan, and when hot, turn in the potatoes, distributing them evenly over the surface of the pan; set back on the stove until of a golden brown color on the bottom, sprinkle with a teaspoonful of minced parsley, fold like an omelet, and serve.

Potatoes a la Lyonnaise.—A nice way to serve potatoes is to slice them, fry a minced onion in a tablespoonful of butter, turn in the potatoes, and as soon as they color, sprinkle with minced parsley, and serve very hot.

Cherry Puffs.—Make a batter with a pint of milk two eggs, and flour enough to make it of the right consistency, sifting through first two teaspoonfuls of baking powder; into this stir a pint of stoned cherries, well drained from the juice; beat well, and pour in greased cups, filling them two-thirds full; steam from half to three-quarters of an hour, or until an inserted straw comes out clean. Eat with hard sauce.

Fruit Syrups.

A store of fruit syrups is a delightful addition to the preserve closet, and surplus fruit can be used in no better way.

Remove the hulls from strawberries and pick over, without washing, if the berries are free from sand or grit, half a dozen quarts of ripe berries. Put them into a double boiler, or a large stone jar, stood within a pan of boiling water, add half their bulk of sugar, that is, one pint for each quart, and heat slowly for an hour, or longer, until the berries are soft. Put into a jelly bag and leave them for two hours, or more, until the juice has completely drained out. They must not be squeezed. Put this juice into a saucepan, heat it to 200 degrees Fahrenheit and keep it at this temperature for one hour. It is best to use a thermometer, but if this is not at hand, heat the juice until it steams, but do not allow it to boil, as this destroys the flavor. It can then be bottled and sealed for future use, and will keep indefinitely. It is important that it should remain at the above temperature for an hour, in order to complete the process of sterilization.

Grape syrup may be made in the same manner, and furnishes a most healthful and acceptable drink for well and sick.

Currants will require three-fourths of the bulk of sugar. Raspberries, blackberries, peaches and apricot syrup are all made in the same way as the strawberry syrup.

To use, dilute the juice with cold water, or soda water, in the proportion of one-half juice to one of water, although these proportions may be varied.

Cooling Summer Drinks.

Bottled Coffee Syrup.—Simmer together three cups of sugar and one of water for five minutes; add this to a cup and a half of strong coffee; strain and bottle. Mix with soda water and cream, or with plain cold water and cream.

Hot Milk.—This can scarcely be called a cooling drink, and yet its immediate effect is to induce perspiration which tends to reduce the temperature. Patients who are troubled with sleeplessness can often be put to sleep by a glass of sterilized milk served hot.

Barley Water.—A very safe and nutritious drink in summer, and one that is pleasant as well, is made by boiling a tablespoonful of barley or rice flour for fifteen minutes with a quart of water; then let it get ice cold and add lemon juice and sugar to taste. Pearl barley or rice may be used instead of the flour, but it requires to be cooked in a double boiler, and for at least an hour, and then strained.

Boiled Lemonade.—The juice of three lemons, five tablespoonfuls of sugar and one cup of water. Add the water boiling hot to the lemon and sugar. When ice cold dilute to taste with cold water, and serve with half a dozen strawberries or raspberries floating on it. Lemonade made with boiling water has a better flavor than if made with cold water.

WRITTEN EXPRESSLY FOR AMERICAN AGRICULTURIST.

LITTLE MAUD SCHOTTISCHE.

RICHARD A. HUEBNER.

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For Jim.

RODNEY BLAKE.

"Well, there ain't no use in fretting about it, Polly. You know we can't, and that's the end on't." Mrs. Lowry, after speaking thus to her little daughter, closed her lips tightly together and went on with her ironing.

Polly watched her with a troubled look. "O, ma," she cried suddenly, "what a be-au-tiful dress!"

"Yes," said her mother. "It belongs to Mrs. Ostrander's little girl. She's about's old as you be. I'm going to do their washings now. Got your little cart ready? There's Mis' Rollins' washing ready to take home. If she pays you, you can stop at the Osborn's and get a quart of to-night's milk. Then you can stop at the bakery for a loaf of stale bread. I'll give you and Jimmie a nice toast supper."

Polly's trouble for the moment vanished from her mind. She ran out after her little cart. The thought of the delicious supper before her made her heart light and happy. Toast suppers were a luxury now since Jimmie had got hurt.

The little girl put on her misshapen, faded, yellow straw hat, laid the clean clothes tenderly in the cart, and started off. She had to go quite a distance before she came to any sign of a road. The tiny shell of a house in which she lived (it was one story high and contained three small rooms) was situated in a desolate open field, a short distance from the railroad track.

When Polly reached the main road she tripped lightly along with her little load. She feared now there might be nobody at home but the servant, and she would have to wait for her money. Then there would be no toast supper.

But Mrs. Rollins was there herself, and dropped the welcome 75 cents in Polly's outstreched hand. Then she said: "I understand that the boy who was hurt so badly in the accident a few weeks ago is your brother. Is that so?"

"Yes, marm," said Polly.

"I'm real sorry. How did it happen?"

"Why," said Polly, "this is how. The fast express had a wheel broke, and had to stop. Then Jim's freight 'come right along behind. Mr. Lee (he's the engineer, and Jim's fireman), he saw the signal to stop, and reversed his engine quick. But the tracks were all wet and slippy, and the freight slid right along into the express. Mr. Lee and Jim jumped, and Jim broke his leg."

"I'm sorry," said Mrs. Rollins again. She crossed over to the fruit dish and selected a large orange and a great yellow banana, and gave them to Polly.

"Thank you, marm," said Polly. She started to go, then returned. "My pocket is so little," she said, "that I'll have to put them in my cart. Could I have a piece of paper to put over them?" Mrs. Rollins gave her a whole newspaper lying near.

When Polly reached her home she took out her orange and banana and hid them in a little hole in the sandy ground. Then she brought in the money and the bread and milk to her mother. Her mother toasted the bread. Then she put some of the milk on the stove in a little shining tin, and poured a little water in it. Then she poured from a cup a beaten egg (Jim had a few chickens), sifted in a bit of flour, added a piece of butter and a little salt, and stirred it all up together. When it begun to thicken a little, she poured it over the toasted bread. Then Polly took a large plateful of the toast and a glass of milk in to Jim, in the next room.

He was sitting by a screened window in the small hot room, leaning back in a big chair. His bandaged leg lay on a pillowed chair in front of him. He was a tall, lank lad of about 15, with now a hopeless, unhappy face. He took his supper from Polly without speaking. But the supper tasted good, and pretty soon he called out, "Say, Polly, got any more toast out there?" So Polly brought in another plateful.

When she had wiped and put away the dishes she went out up the track a way, and sat on a pile of lumber used for repairing the road. She scarcely noticed the lovely sunset and the twittering birds in the fine fenced-in meadows that stretched along on the other side of the tracks. But she heard with a great pang the noise of firecrackers that some impatient boys were letting off in the distance. Day after to-morrow would be the Fourth of July.

"Ma says we can't have any Fourth," she muttered to herself. "Poor Jim, he always cared so much about it! But there's the orange and banana. Now how'll I get the fireworks?"

At breakfast the next morning Polly said, "Ma, do you want me for anything this morning?"

"I guess not," said her mother. "Why?"

"O, I want to go down town a while," said Polly.

She was soon out on the street in her faded hat and mended calico dress. She hadn't thought of any practicable way yet to get the fireworks, and her mind was working hard now to that end.

She suddenly stopped before one of Loring's grocery windows. What a sight! It was completely filled with all kinds of fireworks—enormous crackers, gigantic rockets and Roman candles, colored lights, and many other things.

Polly drew a long breath and cried "Oh!" right out loud. She stood there a long time. Then she straightened herself up, and with a look of determination entered the store.

She remained there over two hours, polishing the lower half of the big window outside and in, and doing some cleaning and arranging inside. When she was ready to go away, the kind-hearted proprietor placed in her arms a great package. Polly's heart gave a great joyful bound, and her dark eyes danced.

"You can't carry such a big bundle, can you?" asked Mr. Loring kindly.

"Of *course!*" cried Polly. Not carry it! Why, Polly had no doubt that she could carry Mr. Loring himself if he had only been a sky-rocket.

"I'm glad Ralph wasn't there," said Polly, as she trudged homeward. Ralph Loring went to school in the same building she did, only of course he was far beyond her, being much older. She didn't like him because he was full of mischief and liked to tease her.

"And now," thought Polly, as she neared home, "I must hide this so ma and Jim won't know till to-morrow."

Ralph Loring was generally known as one of the wildest boys in Kainatuck. He was an only child, and had always had every reasonable wish gratified. "That is why he is so selfish," said the neighbors. He was the prime leader in every bit of boistrous fun in the village.

On the eve of the Fourth he, in company with a dozen others, had instituted the time-honored proceedings of an enormous bonfire, to be held at precisely 12 o'clock on the village green, for the purpose of ushering in the great holiday. The village had been scoured for cases, boxes, barrels, etc. Kerosene was poured over these, and they were partly filled with some easily inflammable substance. The boys had hired Carter's big express team to carry their booty to the common. Nobody knows how long these patriotic youngsters had been saving their pocket money for this special occasion.

The walks were lined with people, and filled with the noise of tin horns. Up through the street went the second express load of boxes and barrels, with a screaming coterie on top.

Suddenly a bright flash of light blazed up from one of the barrels, which was quickly kicked off in the street, where it blazed and crackled in fiendish glee. The people gathered about the scene with smiling faces. An officer appeared and stood looking quietly on.

"Boys, who did that?" shouted a loud, angry voice. The wagon had now stopped, and a tall, strong looking fellow was seen standing on the seat and facing the boys behind him, in the bright light of the burning barrel.

There was no reply for a moment; then a voice piped out: "I'll tell you who 'twas, Loring. Tommy Skollup. He chucked a match in and skipped."

"Skipped, did he, the coward!" shouted Ralph scornfully.

"There he is, Ralph, down by the fire," cried some one.

Ralph and the pedestrians turned their eyes to the fire. On the other side of it stood Tommy Skollop, in an attitude of grinning defiance. His thumb was stationed on the end of his nose, and his fingers were twirling derisively. Ralph sprang down from the wagon, but Tommy's motions were like lightning, and he had disappeared. Ralph got back on his seat, and the wagon moved along, the grinning spectators of larger growth with it.

At last the boxes and barrels were piled up in the common 20 feet high, and the boys dispersed to wait till midnight.

Ralph Loring and Arthur Chadwick passed down one of the back streets together, wiping their heated faces. Suddenly Arthur cried: "There's young Skollup! Let's go for him!"

They started. Tommy started, too. On—on—on they ran—down towards the railroad track. Here Tommy disappeared in Parson's orchard. The two exhausted boys perched themselves on top of a pile of lumber to rest. The stars shone brightly overhead, and flashes of summer lightning darted frequently across the sky.

All at once, as Ralph started to change his position, a board became misplaced, then another and another, and slid off. He slid off with them, then went back of the pile to climb up. "Cracky," he suddenly cried, "just what I wanted!"

"What's the matter?" asked Arthur.

But Ralph had torn open and was now munching a large fine banana. "You can have half," he said, breaking a piece off. "We'll divvy this orange, too. Found 'em under this board." They demolished the fruit as only two hungry boys could.

"What else you got there?" asked Arthur.

"Hi! Wait till I undo this package. Gimminy! Sky-rockets, Roman candles — a regular picnic. Say, Art, got a match?"

Arthur fumbled about in his pockets and brought forth some matches.

"Let's set off these old Romans, first," cried Ralph. "What whoppers! And here, attach the pin wheels to the end of that board. And give a touch to that rocket. We'll astonish the natives."

The next morning dawned, bright and fair. Happy little Polly dressed herself early and went out towards the lumber pile to see if her precious treasures were safe. O, how happy Jim would be by and by! She fairly danced on the way.

All at once her heart grew still and her face turned white. She clutched her chest with her little hand and gasped for breath. Strewn all around the ground were remnants of an orange and banana, and used-up fireworks.

With a loud cry of agony she ran to her hiding place. Yes, these were the remnants of her own precious treasures.

How happy she had gone to bed last night with her sweet secret! How deeply impressed upon her mind had become the scene of Jim's happiness when she should have shown him her treasures! What, was all that nothing but a dream, now? It wasn't true! It *couldn't* be true! But the poor tortured little heart saw that it was all true. An insane, rebellious anger continually alternated with a terrible grief. Then, weak and hopeless, she crouched down on the the boards and almost cried her little heart out.

Ralph Loring slept late. He had been up till long after midnight superintending the great bonfire.

His father had gone to the store when he came down stairs, but his mother was sewing in the pretty dining room, waiting for him to come down, so as to be company for him.

Then Mary, the kitchen girl, brought out Ralph's breakfast, which she had been keeping warm in the oven. Ralph took a couple of mouthfuls, then grumbled out: "This steak and potato is all dry. I want some fresh ham and eggs, mother."

"Very well," said his mother. "I'll go and cook them, as Mary is busy ironing." So Ralph read the morning paper till his breakfast was ready.

While he was eating it, his mother said: "Your father was telling me something rather pathetic this morning about that little Polly Lowry. You know her, don't you, Ralph? Her father got killed several years ago, and now her brother has been hurt in an accident."

Ralph nodded.

"Well, she came into the store yesterday and almost begged your father to let her do some cleaning for him, and pay her in fireworks. So he let her, to please her. She worked pretty hard and he gave her a generous supply. She said her mother couldn't spare anything for a Fourth this year, and she wanted her brother Jim to have one. Father questioned her a little about her plans. She said she wasn't going to let her mother or Jim know about the fireworks till to-day, and she

thought she would hide them in a pile of lumber near their house. Poor little soul! I hope she won't be disappointed."

Ralph started, as the truth flashed upon him. He had destroyed little Polly's fireworks!

"Poor Jim!" said Mrs. Loring gently. "He is about your age, Ralph. Think of him lying in that little hot, close room, with no comforts nor pleasures. If you were sick or hurt, you might still enjoy the Fourth. You could have fireworks set off where you wished, so that you could see them, and you would have dainties brought to you. But he will have none of these things. He must wait a whole year longer. That is, he would have had to wait if it hadn't been for his little sister's love and sacrifice."

That is the way Mrs. Loring "scolded" her spoiled boy for being selfish and thoughtless of others. Her words sank deep in his heart this time. The picture she drew haunted him. Her words danced before his vision. Besides, he saw Polly heart-broken with disappointment. The vision was more than he could stand. He dropped his knife and fork. "Mother," he blubbered out, "I—spoiled—all—Polly's—fun!"

"You, Ralph?"

Then it all came out, and his mother's arms were around his neck, and she was crying, too.

"Help me to make it right, mother," said Ralph. "You always know how."

The long, hot, dusty Fourth had nearly passed. Polly hadn't been well all day. Her mother said it was on account of the heat, and made her lie down. So nearly all the afternoon Polly had lain on her little hot bed, very quietly. It seemed to her that she could never take any interest in anything again, or care about anything.

Jim sat at his usual place by the window. He had longed all day for a drink of ice water. He would have sent Polly to the ice house for a cent's worth if she had been well. As it was, he tried not to think he wanted it.

Soon the people in the village would be setting off their fireworks. He might perhaps see a rocket or so from his window, but the trees yonder would hide the view. Never since he could remember had he passed a Fourth without a good supply of fireworks. Well, things might be worse, after all. They would be decidedly worse if little Polly were to get sick and die. What has come over her so suddenly?

RALPH AND HIS MOTHER.

What was that noise—a team in front of the house? Yes, as true as the world. And it had stopped.

Jim peered wonderingly out through his fly screen. A man had got out and was carrying a market basket into the house. Then a strange thing happened. He left it on the front steps, pounded loudly on the door, and started off, team and all.

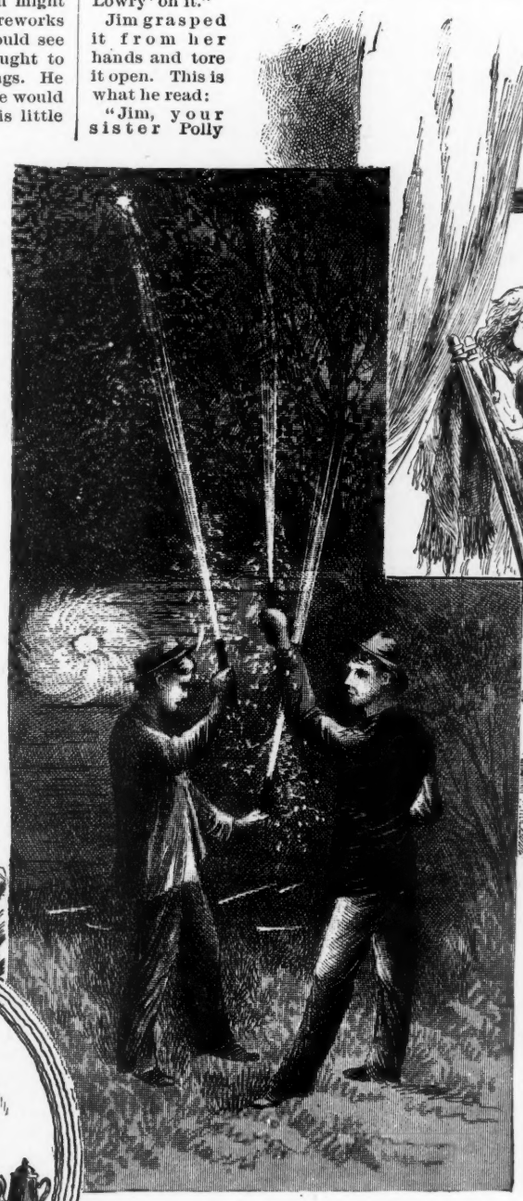
"Ma!" called out Jim. His mother started in from the kitchen.

"See what's in that basket! Ain't that a note pinned on there?"

"Yes," said his mother, "and it says 'Jim Lowry' on it."

Jim grasped it from her hands and tore it open. This is what he read:

"Jim, your sister Polly worked hard to give you some rockets and things for the Fourth. She hid them in the lumber. I and another fellow came across them last night and fired them all off. Afterwards I understood just how it was, and was awfully sorry. I hope you'll enjoy the things I send you.—An Unknown Friend."



POLLY'S TREASURES DISCOVERED.

"O," cried Jim, "I see it all. Poor little Polly. Say, Polly!" he called out. "Come here, quick!"

His loud, joyful voice brought her out quickly. Then he read her the note. "Now open the basket!" he cried.

There was a package of bananas, another of oranges. Then all kinds of fireworks—five times as many as Polly had had. Then a quart package of solid ice-cream.

"O, give me some of that cream, quick!" cried Jim. "I've been burning up all day. Hurry out with the saucers, Polly. O, ain't this jolly! Say, Polly, you're an awful good sister. Just wait till I get well, and you shall have a new dress—and a hat—and shoes."

But Polly had been puzzling her little head over that note. "O, I know," she cried out suddenly. "'Twas Ralph!"

Will Thought So Too.

S. H. PLATT, M. D.

Mary is diffident, and never would tell it herself, so I drew the secret out very cautiously, and now, everybody shall know it, for, isn't it out of all propriety that people should be sick in the bright sunny summer, when all nature is moving on to perfect all the grains and grasses, and ripen the luscious fruits? The time to be sick is when winter growls around, and storms and dreariness rule the world.

POLLY HAPPY AGAIN.

Well, Mary has a queer old head on her young shoulders, that seems all the older by contrast with the thoughtless, reckless, dare-devilism of her really noble and kind-hearted older brother Will.

"Say, Sis! a brilliant idea has struck me," he exclaimed, as he seated himself near her.

"Hope it did not hit very hard," quietly observed Mary, looking archly up from her book.

"Yes it did though—struck way into the brain cells that Prof. Cranus told about the other night; and what's more, it keeps me in it all the time."

"Well, it won't do to have such a thing around among your brain cells; something might get damaged. So, dazzle my eyes with its brilliancy," laying down her book.

"Now, Sis, don't get sarcastic. You know I've managed to get sick every summer since way back" (he was almost seventeen), "while you, only a girl, and without a quarter of my vim, always keep in apple-pie order. And I don't like it; —I don't mean apple pie, nor you being always ready for the word go,—but my ambulance and hospital spells. That's what I don't like, and I've made up my mind this summer to—to—to— chew gum to help my digestion, and eat lots of good victuals to keep my strength up, and be out a good deal nights for exercise without getting sun struck, and drink no cold water, nor eat any fruits, so I won't get dysentery nor cholera; and

smoke cigarettes to keep off the blues, and use some stimulants to drive away malaria. And I reckon I'll pull through this summer in dandy style!" with a half-defiant and half-triumphant air.

"Yes, just *dandy*," remarked Mary, with a peculiar emphasis upon the word that made Will wince, for he despised a dandy; but he waited for her to continue. "Let's see; I've just been reading in 'The Secret of Health,' that gum fills the stomach with saliva, which is alkaline, and neutralizes the acid of the stomach-pepsin by which food is digested, and *so* you will help your digestion; also that excess of food in warm weather, when it is not needed to supply heat, loads the blood with carbon stuff that fevers it and weakens the nerves, and in *that way* you will keep your strength up; also that day sleep, after 'nights out,' is not refreshing, and robs the system of the chemical sunbeam that it needs for its vital work, and I'm afraid that bad company, too, finds those who exercise much in the night,—so in that way you will not get sunstruck. Cold water, in moderation, strengthens the organs of digestion, and ripe fruits purify the blood and tone the nerves, but you would avoid dysentery and cholera by not using them; cigarettes reduce nerve power, and by *that* you would keep off the blues; and stimulants poison the blood and clog the liver, and weaken the bowels, so that among grown people fifty who use stimulants take cholera, to one who does not, and in *that* way you will keep off malaria! Yes, you'll 'pull through'—*perhaps*—but it will take a lot of pulling to do it!" (very decisively.)

"Thunder, Sis! A body would take you for a graduated M. D. with your shingle flying from an orthodox steeple!"

"Well, I've learned a good many things that one boy, not far off, might know to his advantage. It is true I keep well, but it is no haphazard matter. Shall I tell you how *I* do it?"

"I'm not a girl, and your way might not suit me," half growled the disconcerted young man.

"No, but we are both human, and all human animals have to live according to certain ideas to keep well."

"Trot 'em out then right away, that is, if you have 'em stalled handy," said Will, a little impatient to dispose of them as summarily as Mary had done with his "brilliant" ones.

"Let me ask you a question first. Do you think it is Bridget's duty, as our cook, to prepare everything for the table that might be brought to her? Suppose, for example, that the milkman should leave sour milk, and the grocer decayed fruit and vegetables, and the butcher strong smelling meat,—should she cook it all the same, or serve only wholesome food?"

"None o' that sort for me. I propose to keep well," somewhat loftily exclaimed Will.

"Well, the stomach is the body's cook, not a mill to grind every grist that its owner may choose to put into it. I give mine only such things as will furnish healthy meals to the blood, and do not allow it to cook for two, when it has only one to provide for. Then I keep it clean and fresh by plenty of pure soft water *between* meals. We would not like to have Bridget stop in the midst of preparation of a meal to take a bath, nor do the vital organs enjoy the tumbler full of ice water that the stomach often gets while preparing its meal for the blood. I also give my stomach plenty of good ripe fruits at all seasons at the beginning of or before meals, so that their cooling and invigorating juices may brace up my digestion and purify my blood, and then I eat not more than three kinds of food at one meal, because I have learned that variety stimulates the appetite to eat for two or three, instead of for one, and I allow the desserts to pass untouched, because I generally eat enough before they are brought on, except I know that something of which I am very fond is to be served,—then I save a corner for it. Thus I never overeat, and that keeps me in good order all the time."

"I know," said Will; "at least Tom Dean told me that your breath is always as sweet as June roses, and your lips——"

"Oh, Will! You naughty boy; but I will go on. Every morning, before the dew is off, I take a nice walk and breathe way down, down—ever so far, and once every day I have a cold sponge bath, often with salt in it, and am very careful to keep my window always open to ventilate my room enough to keep the sleeping-room odor always away; then I sleep eight or nine hours of every twenty-four, just as many of them before midnight as possible, and never, indoors or out, sit in a draft, unless I have sufficient protection not to get a chill. Now look at me. See how clear my eyes and skin are; and it all comes of not meddling with harmful things, and keeping myself well supplied with good things."

"And is that what makes you so *cute*, too? soberly asked Will.

"He-he-he!" responded the gleeful ripple of Mary's laugh as she replied, "Good digestion makes good blood, and good blood makes a lively brain. Does that "brilliant idea" of yours pinch the brain cells any now?"

"Confound it, Mary! You talk severe enough for a parson—but what's the use! A fellow must have some fun."

"Yes, that was 'fun' last Sunday when you took two plates of ice cream on the top of a hearty dinner; and that was 'fun' when you last night ate that lobster salad before bed time after a hearty supper,—but how about that fearful headache on Monday, and the colic before midnight?"

Will winced again, then said, as many an older one has thought:

"Well, I don't see what we have such a hankering after good things for, if we can't have them when we want them."

"I think it is that our desire for something better—self-mastery—may have a keener relish. I am sure that when I know that I have denied myself some gratification, and become by it a more perfect master of myself, I have greater enjoyment than when I yield to my appetite; and since I cannot have both to the fullest extent always, I take the better always, and the other as I may."

Mary's face put on the glow of a triumphant spirit as she added:

"If my generous, good-hearted brother could only see the manhood that struggles for development through such denials, I am sure he would mark out a different programme for the summer."

Will sat a moment in thoughtful silence, then the good within him arose in its might, as he exclaimed:

"You're right, Sis, just as you always are! Count me Volunteer One under your colors. But, really, now,—about that cholera business, how is a fellow to stave that off?"

"Simply live right, and have no concern about it. Cholera never seeks healthy bodies carrying happy hearts."

"Hurrah for such bodies and hearts! You're just the best and 'knowin'est' sister that ever lived!" and a resounding kiss was planted right on the rosy lips that Tom Dean said —— —— ——.

What Can I Do?

JENNIE JAMESON.

Fred Barker was a cripple, and so feeble in body that he had to leave school. It had been his highest ambition to get a good education and support his widowed mother. The thought that he was now to be a burden to her, instead of a help, was a bitter blow to him, and he became gloomy and despondent.

His mother, being unable to cheer or encourage him, sought advice from his former teacher between whom and her boy there had been much sympathy. The result was that the teacher visited Fred, and remained alone with him for some time.

When he had gone, the mother was surprised at the change in her son. His erect bearing and flashing eyes, as he moved about the house, his frequent laugh, and the new interest he took in the details of his surroundings, delighted her. "What did Mr. Benson say to you, Fred?" she asked.

"He told me there was a place for me, and that I must try to find it," said the boy. "He found out that I liked to sell things the best of anything, and he is going to help me start a little store in Carson's old building, near the schoolhouse, where I can sell things to the school children—paper, and pencils, and lunches, and candy, and such things."

The modest little store was started. That was years ago. To-day Fred Barker owns the house in which his store was started (it is now fixed over into a pretty home for his mother) and the north front room is still reserved for his store, where the school children buy their supplies.

Don't fall back, boys and girls, and say there is no place for you. A friend may not always come to help *you* at the right time, but you can help yourself by hopefully and patiently looking the situation over. Always remember, however, that a hopeless, despondent mind cannot plan and act to the best advantage.

Circumstances Alter Cases.

"I don't see," said Mrs. Latham emphatically, "why folks are so crazy to buy damaged goods. Sech stuff don't pay for makin' of it."

"I know it, mother," said Miss Annie. "May Pettis got a black silk at the last Boston fire sale, and it's beginning to wear in places already. I don't think it pays to make up such goods—do you, Mrs. Andrews?" she asked politely of her next-door neighbor, who was in for an afternoon call.

"No, I don't," said Mrs. Andrews. "Jess wanted to go to that last Boston fire sale, but I said—"

A quick, excited step was heard on the outer step, then the door burst open, and a young woman—Annie's married sister—rushed in.

"O Annie," she cried, "Rogers & Co. have just got a new consignment of goods from Boston. They were damaged a little at the last fire, but you can get some real bargains. Just look at this muslin, will you, for ten cents a yard! I got enough for a dress and told the clerk to save out enough for a dress for you. Lou Willis has got one just like it. Get your hat on and come and get it before it's gone."

"O mother," cried Annie, "would you?"

"Of course," said Mrs. Latham, "Go right down an' git it. If that muslin's good enough for Lou Willis I guess 'tis for ennybody."

"And Annie," said Mrs. Andrews, "be sure to git enough for a dress for Jess—"

Suddenly Annie burst into a hearty laugh. "O dear," she cried, "what were we just talking about?"

"We wuz talkin' about silk goods," said her mother severely. "Fire alwuz ruins silk."

"Of course!" said Mrs. Andrews, with a reproving glance at Annie.

So Annie went for the muslin.

Why They Celebrated.

At a great celebration by the victorious party at the close of a certain Presidential election, it was noticed that a prominent manufacturer of the opposite party took no small part in the same. Jesting and scornful words passed among his townsmen of both parties. "He is a turn-about," said they. "He is going with the victorious party for selfish reasons," said others.

The gentleman's son, Clifford, attended the High school, among the girls and boys of which political feeling had been running pretty high. A friend said to him one day, "Say, Cliff, all the boys are against you—say you and your father are not loyal to your party and change your political opinions too easily. I think so myself. What did you go on the other side for just because it happened to come off victorious? That isn't the way for a man to do."

"Who said my father and I went to the other side?" said Clifford. "It's no such thing."

"What did you celebrate the other night for, then? And you stand up for the new President when he doesn't belong to your party at all."

"I'd like to know," said Clifford scornfully, "what a man ought to do if it isn't to be loyal to his President? Isn't Mr. Blank going to be my President just as much as he is yours? My father says (and I agree with him) that party should be forgotten when our President is elected, and everybody should celebrate to show his loyalty and support."

The listener concluded to talk about this (to him) new view of the subject with the boys. In the meantime it occurred to him that a man might have a really patriotic motive in celebrating with the opposing party a Presidential or other election.

American Soubriquets.

Florida folk are designated as Fly-up-the-creeks; those of Georgia, Buzzards; of Illinois, Suckers; and of Indiana, Hoosiers, which is a corruption of Husher, once a familiar term for a bully throughout the West. Iowa is said to have won its name of the Hawkeye state from an Indian chief, so christened, who formerly was a terror to its borders, and, consequently, her sons are all Hawkeyes. Those of Kansas are Jay-hawkers; Kentucky, Corn-crackers; and Louisiana, Creoles,

because descendants of the first French and Spanish settlers make up a goodly portion of the population.

The Girls and Boys Are Recognized.

Delegates from the grammar and high school boys and girls from each county in the United States, and from similar schools abroad, are going to meet in Chicago on July 17. They will form one of the more than hundred congresses to be held during the World's Fair under the auspices of the World's Congress Auxiliary of the Columbian Exposition. This youths' congress will hold three half day sessions, and the preceedings, together with the names of the appointed delegates, will be published and form a part of the great World's Fair report of 1893.

The Profit of Defeat.

Balzac's father had put him on trial for a literary life, and the boy finally completed his tragedy. He counted on a great triumph. The family and friends assembled, the solemn trial began. It was a flat failure, and the universal verdict was that the author ought to do anything except literature. Honore did not flinch. "Tragedies are not in my line, that is all," he said; and returned to his work with redoubled ardor.

Storied Words.

Gazette is the name of an old Venetian coin, worth about three farthings, the sum charged for a reading of the first Venetian newspaper; *milliner* is a native of Milan, Italy, once famous for its manufacture of silks and ribbons; and our slang term *Jimminy* is a corruption of "O Gemini" (Latin for twins) used by the Romans when they called upon Caster and Pollox to help them.

An Error Puzzle.

Don't you think it's fun to hunt out, in the paper or book you are reading, errors in spelling, grammar and punctuation? Here is a chance to do so and win some prizes besides.

The field for operation is our advertising department, in any part of this (July) number of the AMERICAN AGRICULTURIST. Read all the advertisements over carefully, then send in a record of these errors, and where found: 1, all misspelled words; 2, all grammatical errors; 3, any sentence or phrase that is so badly constructed as to make it possible to mean something that the author evidently does not intend it to mean; 4, any error in punctuation. Our standard in spelling will be Webster's Unabridged; on all other points the editor of the AMERICAN AGRICULTURIST is to be the judge. The replies must be received on or before August 1, and should be addressed to Puzzle Editor AMERICAN AGRICULTURIST, 52 Lafayette Place, New York. The prizes will be $3, an AMERICAN AGRICULTURIST telescope, a Columbian souvenir spoon, and two nice books.

ANSWERS TO THE APRIL PUZZLE.

Part I. The town caucuses elect delegates to the State conventions. State conventions elect delegates to the National conventions. National conventions nominate men for President. Voters choose electors. Electors elect the President.

Part II. We have decided not to publish the answers to this part as they would take up so much of our space. Of course it was very easy, after having discovered the names of the cabinet officers and nomines, to decide whether or not they answered the conditions of the puzzle. Almost the only mistake made was leaving out the names of certain officers or nominees. Those interested can find these lists in almost any small political handbook in the World, and some other almanacs, in the front parts of many diaries, etc., also, after some search, in the pages of history.

THE APRIL PRIZE WINNERS.

1, Alice J. Prentiss, New York, $3; 2, Fred Buck, New York, AMERICAN AGRICULTURIST telescope; 3, H. B. Jordan, New York, a scrap and card album; 4, A. S. Prather, Kansas, a Columbian souvenir spoon; 5, Miss Sarah A. Field, New Jersey, a pocket knife.

Dear AGRICULTURIST: I want to thank you for your puzzles. Even though I get no prize, I have the sport of picking, or trying to pick out their answers. I do not remember the time when the AGRICULTURIST did not come to our house, and my grandfather has had it since mamma was a little girl. The only trouble is, it does not come often enough. We read it from beginning to end, and if we do live in the city we are all country children at heart. Lillian H. Berdge, Essex Co., Mass.

OUR LITTLE FOLKS.

Mysie's Adventure.

HARRIET E. B. LOOMIS.

Little Mysie lived away out in the country on a farm. She was a very social little body, and sometimes became tired of her chickens and kittens, and strolled down toward the road to watch for passers by.

The roadside was forbidden ground to her, but about half way between the house and the road, close to her papa's driveway, there was a big stone, where she was allowed to go and sit whenever she liked.

Sometimes, from her stone seat, Mysie would watch a little girl go by, on her way home from school. She always carried a dinner basket on her arm, and her hair was always braided and tied with a pretty ribbon. She would say: "Hallo, Mysie!" Then Mysie would slide down from the top of the stone, and dance up and down and laugh, but she was afraid to answer.

The little girl would cross the road and walk by on Mysie's side, but she never stopped, because she had to get home as soon as possible to help her mother. But Mysie always felt as if she had received a call.

There were also city carriages, which often passed on their way to the woods. In these would ride little girls with lovely white dresses and bright sashes, and pretty lace bonnets, or big hats trimmed with gay ribbons. They would smile when they saw Mysie on the stone, in her calico dress and brown hat, with her pretty white fox terrier Gyp beside her. Then Mysie would smile back at them.

But it was their ribbons which delighted Mysie's heart, and she chattered so much to her mother of how "Nat one 'ittle gu' had a wimmern," that her mother brought out an old red satin ribbon, and tied it around Mysie's straw hat. After that, when Mysie saw any little folks coming, she would take off her hat, and hold it out, so that it might be plainly seen.

One day Mysie had been playing by the stone with Gyp for a long time, and no one had been by. Suddenly she thought that it would be very nice to run down to the road and see if any one was in sight and run right back again. So she and Gyp went trotting along the driveway, and she never stopped until her toes were in the soft hot dust.

About this time Mysie's mamma missed her little girl and went out to look for her. Suddenly she saw the street all filled with cattle, and Mysie right in the midst of them. She screamed right out and ran down the street, for she thought her little girl was going to be hurt.

But one of the men who was driving the cattle with a big whip ran right up and caught Mysie up in his arms. Mysie's mamma thanked the man, then took Mysie home, and Gyp followed after them.

"O Mysie," said mamma, "didn't you know it was wrong to go away from the stone?"

"'Es, me did," said Mysie, crying. "Me wont-never-do so-aden."

Successful Hunters for the Pot of Gold.

ROSE MARY THORNE.

Do you remember ever hearing about some foolish people who searched and searched for the end of the rainbow, expecting to find there the "pot of gold," and how absurd it seemed to you that anyone should hunt for the end of a rainbow? I am afraid you will not believe me when I tell you that I have discovered a very interesting community, each one of whom has really found the pot of gold. Did they find it at the end of the rainbow? Wait a moment, and perhaps you will be able to answer the question yourself.

First you must recall the colors of that wonderful bow—red, orange, yellow, green, blue, and violet. Now did you ever watch, just at dusk, for a large sphinx moth, that flies straight to the little pot of gold at the base of the yellow evening primrose blossom? And then did you see him, with his long, sucking tube, which he uncoils, extract the golden nectar? The sweet-scented honeysuckle outside your door he loves to visit, too. Have you not robbed the humble bee by sucking the nectar yourself from the base of the clover blossom and the wild columbine. Into the crimson and the orange and the yellow blossoms of the snapdragon this strong humble bee forces his way, and to the pretty purple and blue garden violet he goes to gather sweets. Even into the mignonette's small, greenish flower is the tiny pot of gold, waiting for some little insect visitor. The blossom has no bright-colored petals to wave, but the exquisite fragrance of the flower guides our winged friends to its honey fount.

But now, as the flowers flaunt their gay petals at the bees and the moths and the butterflies, are they eager to give away their hoarded gold, or are they waving signals of distress? If the flowers could speak, they would say: "We need them, and they need us. We give them food, and they in return make it possible for us to produce seed, and so be of some use in the world. Our seeds will not grow without the aid of the yellow powder (pollen) that you see on our faces. Now some of us do not have any pollen of our own, and sometimes when we do have it it is of no use to us, for it does not grow in the right place to give life to the seed. When the bees and butterflies come to our nectaries, if we carry this gold dust, they rub against it with their velvet coats. Then, as they depart, they shake it off just where it is needed; sometimes upon the pistil of the same flower, sometimes upon the next flower they visit."

Baby May's Fourth.

When Willie Camp woke up on the morning of the Fourth, he couldn't wait to eat his breakfast, but had to go right out in the yard and fire off some crackers. Willie would set the cracker up between two sticks, light it and then run back quick. When it went off, Baby May would scream with delight.

At last Baby May said, "Me want to fire off tracker." So papa took her hand and led her down to the cracker. He held her hand while she fired it with a match, and then jumped her way back. Then the cracker went off with a big bang, and Baby May jumped up and down in great excitement and said, "Me fire off dat tracker all 'lone."

How Elsie Lost Her Candy.

Little Elsie went out to walk with papa. Papa stopped at a store and bought two sticks of candy, and gave one to Elsie. When they came out of the store Elsie said, "Wat you doin' to do wif your tandy, pa-pa?"

"O, save it till I get home," said papa. So he slipped his stick out of sight under his vest.

"Dess I'll save mine, too," said Elsie. So she slipped it under her little sacque.

By and by she looked for her candy but couldn't find it, then she began to cry.

"I put it under my vest just like you did, papa," she sobbed.

"But, Elsie," he said, "papa has got a big pocket on the inside of his vest where he put his candy, and you haven't. But don't cry and you shall have my stick."

So Elsie didn't cry any more, and ate her candy right down for fear she would lose it again.

Queer Little People.

E. A. MATTHEWS.

One day Lucy had the mumps and was tired of everything.

Her mother said, "Did you ever see any dolls made of potatoes?"

Lucy laughed at such a funny idea, but begged her mother to show her what she meant.

So they sent down cellar for a few Irish potatoes. They selected potatoes that had queer little knobs, or lumps, and these were the heads. With two sharp-pointed sticks they made the legs. With two more (one on each side) they made arms. Out of some white muslin they made caps to cover the back of the heads, and placed them on so that the bumps looked like noses and chins. Then the eyes, or small dark spots of the potatoes, made eyes for the dolls.

Lucy and her mother made skirts for these queer people, and around each one pinned a shawl of pretty calico, or woolen stuff. The lady dolls had ruffles around the edges of their caps; the gentlemen dolls had plain caps.

Pitcher Plants in Florida.

One of the most interesting plants in Florida is the pitcher plant, *Saracenia variolaris*, which is very abundant in some of the Southern States. Its most remarkable qualities are its power to secrete a fluid which attracts insects, yet invariably proves fatal to them; the prison-like character of its leaf, when once the insects enter the fluid tube; the smoothness of the sides; and the ease with which it digests its insect diet. Its most striking part is the pitcher-like leaf, and next the style, which spreads out into the form of an umbrella and envelopes the whole flower. As the plant increases in size, the sides open to form a tube, and a round hood, in which one part of the lip of the stipule projects over the other, which is below it. The tube, through which the insects enter the plant, is much larger at the apex than the base; is round and smooth, except a narrow pit near the opening; and secretes a fluid at the upper and open part which insects eagerly sip. Having tasted it, they seem to become lost to all feeling but to obtain more, and eagerly hasten into the tube, where sure death awaits them, it being impossible for them to climb up the smooth sides of the leaf, even if they escaped. The fluid stands in the bottom of the tube, for, apparently, the special purpose of drowning and partially digesting them. Insects usually begin tasting the nectar near the door, or opening, then enter and feast on that in the interior until they seem to become paralyzed, for they loosen their hold, tremble, and finally drop into the mass of fluid at the bottom of the tube. A few very cautious insects may try to escape after having entered the open portal, but that is rendered impossible by the hood, which conceals the outward passage, and prevents egress. The tube is too smooth to render walking along its sides possible. When the insects fall helplessly back into the fluid at the bottom of the tube, they undergo maceration there, until they finally become mere pulp at the lowest part of the plant. Every part of them is dissolved, and apparently utilized, as nothing is ejected. That the fluid found in the pitcher plant is not rain water, but is secreted by the plant itself, becomes evident by the fact that the opening being covered by a hood, no rain can enter the tube, but, aside from that, it is well known that the plant can secrete the fluid as readily in dry as in wet weather, and has been seen full, even when rain has not fallen for weeks.

J. M. MURPHY, Hillsborough Co., Fla.

The Snake River Valley.

The Snake river plains and valleys begin in the northern part of Bingham county, Idaho, and with few breaks by rolling hills extend to the western border of Washington county, where about ten miles northwest of Weiser the Majestic river plunges into a deep cañon, from which it does not emerge until reaching the Columbia. There are, however, a few fruit orchards in coves and on narrow strips of bench land at intervals in the gorge between Lewiston and the railroad crossing at Riparia. The healthfulness of these plains for both man and beast, is unsurpassed, and many diseases common to other sections of country are unknown here. The casual observer traveling over this region on the Union Pacific train is often unfavorably impressed with the general appearance of the country. But the settler, with plenty of water for irrigating, has been surprised at the productiveness of the soil and the ability to raise everything produced in the north temperate zone But this soil can produce nothing but sage brush, grease wood, rye and bunch grasses, without irrigation. Nearly all the water of side streams has been appropriated by settlers joining at different points and constructing ditches, some of the water has been carried out on the plains a short distance. But the great waste must be redeemed mostly from the waters of Snake river, which is very unfavorable and requires large capital to make any considerable amount of water available at any point. The fall in the Snake river below American Falls is very slight, averaging not more than three feet per mile. The river is let down on its way to the sea through the section of country between the American Falls and Weiser by a series of falls varying in height. With the exception of the American Falls none can be taken advantage of for the initial point of ditches, since the river runs in a deep, rocky bed. From the source to the American Falls there is sufficient fall, and the river runs near enough to the surface of the land to render irrigating ditches practicable at reasonable expense. Capitalists, having learned the desirability of the country and the producing powers of the soil, are investing extensively in irrigating canals, particularly in Bingham county.

This work has been conducted so quietly and rapidly that the world is scarcely aware that anything is being done. The largest of these canals are from 40 to 70 feet wide on the bottom. After leaving the river they are divided, and farther on subdivided, until they resemble the branches of great spreading trees. Thus the water is carried over all the land that can be reached by them. The Eagle Rock and Willow Creek canal comprises a capital stock of $100,000; the main channel and laterals measure over 100 miles and cover an area of 100,000 acres. The Idaho Falls Canal and Irrigating Company, with a capital stock of $240,000, have 60 miles of canal and laterals, and cover about 100,000 acres. The Idaho Canal Company, capital stock $500,000, have over 100 miles of canal, and are now extending the channel across the Fort Hall Indian Reservation to Pocatello, a distance of 55 miles from the head gate. When fully completed, this canal will furnish water for over 100,000 acres of land.

L. L. SHEARER, Washington Co., Idaho.

The Kansas Corn Crop.

The season of 1892 has demonstrated the important fact in corn culture, that in the corn growing region of the Southwest, we can plant as late as June 20th, and raise sound corn, with favorable conditions for plant growth afterward. Probably one-fourth of our whole crop was planted from June 10th to June 20th; and while the yield is not equal to that planted three weeks to a month earlier, the grain is fully matured and very well filled, with an average yield of 30 to 35 bushels per acre. Several fields within my knowing have yielded upwards of 90 bushels of shelled corn per acre, without any unusual treatment or cultivation, only that within the past five years they have been tile drained. A sturdy German, a cabinet maker by trade, moved here from California a few years ago, and by his own labor, put down tile under 75 or 80 acres of very rich, but very wet, bottom land. Two years demonstrated its value and most of the neighbors, tumbled heels over head, to enjoy like benefits upon their farms. The result is that from one-third to one-half has been added to the yields of all this tiled land. The good work still goes on. The very wet spring of 1892 demonstrated that the tiled land could be planted or worked very much earlier, than undrained upland, and the early planting often doubles the yield of corn.

In this connection there is a fact, not generally noticed, that we are raising our corn crop very much cheaper than 20 years ago. In 1872 I addressed a circular letter to a large number of prominent farmers in Kansas, asking "what it cost them per bushel to raise their corn crop." With one exception, the answers ranged from 24 to 31 cents. The exception was 18 cents. The average was about 28 cents per bushel. With good land and a favorable season, corn can now be raised for less than ten cents per bushel in Kansas, Missouri or Iowa. Better horses, improved implements and more skillful cultivation, have increased the average yield, and lessened the cost of cultivation and preparation. The indications are that should low prices for wheat maintain for another year, very much less of that cereal will be raised, and an increased acreage of corn will be planted. The farmer that has kept his eyes open, and put a large part of his wheat land in clover and corn, and increased the number of his hogs, is the one that will make the money this year.

A. G. CHASE, Leavenworth County, Kans.

Sorghum in the Panhandle of Texas.

In the Southwest, sorghum makes one of the best forage crops. It needs little rain to make it. Some prefer the Amber, while others use larger varieties. Plant in drills three feet apart and sow thickly. Hoe it once or twice, and cultivate often enough to keep it clear of weeds. One can begin feeding it, as soon as it begins to head, to horses, hogs and other stock, which it will help fatten. Never cut more sorghum than will be fed at once. It takes stock some time to get used to eating it. But they never fail to acquire a liking for it. The best time to feed it is when it has headed out, being sweetest then. Horses and other stock eat it, stalks and all. In the Panhandle are great fields of this nutritious feed. Cut the sorghum before a freeze. Set up forked posts, four feet high and about ten feet apart in a row, and lay poles on them, or stretch a wire, as you wish. Place the sorghum against them and it will keep sweet all winter in West Texas. It makes three times as much feed to the acre as corn. For winter feed plant about the middle of July.

W. L. MOORE, Denton Co., Texas.

Among New Zealand Farmers.

The wool season has practically closed, and the quantity handled shows a considerable increase over preceding seasons, both as regards local sales and exports to London. The colonial wool sales are annually increasing in importance. It is anticipated here that the election of your new president will result in something being done to encourage the importation of New Zealand wools into American markets, though I assume that Mr. Cleveland is fully alive to the propriety of moving carefully and somewhat slowly, lest he should upset the equilibrium of official and industrial matters. The past summer has been exceptionally irregular in weather, and it will take many years to recover from the effects of the appalling floods in Queensland and New South Wales. Notwithstanding erratic climatic conditions in New Zealand, the grain crops have, on the whole, been harvested in prime condition, the chief exception being the Waikato wheat, in Auckland province, for which the season has been altogether too wet. As a partial set-off to this, the Waikato farmers have been able to keep well supplied with stock, for which there has been abundant feed and very good prices. The wheat market is phenomenally low, and London values show no sign of rallying. There is little chance, therefore, for farmers to receive good value, although their grain is of excellent quality. Best milling is available in Canterbury, which is the chief wheat center of New Zealand, at 55 to 60 cents per bushel of 60 pounds f. o. b. Oats have grown well, and are perhaps a better crop, both as to quality and quantity, than for the past two or three seasons. Barley is of good quality, but there are indications that there will be none too much in the country. At present it is the most expensive cereal in the New Zealand market, 80 to 95 cents being the range for the best. The flax trade has been kept fairly going, and orders still come forward, at good figures, from America. The United States consul to New Zealand, Mr. J. D. Connolly, leaves here to-day, having failed considerably in health. A presentation was made to him a few days ago, which shows the general esteem in which he was held.

S. CLARKE JOHNSON, Auckland, New Zealand.

Farm Birds in Nebraska.

Eight years ago, in Northwestern Nebraska, the common quail was an entire stranger. The first season which I spent here I was on the lookout for him among the reeds and willows, but I looked in vain, nor did I hear the well remembered call of "Bob White!" Five years ago some gentlemen at Long Pine, a town about one hundred miles east of here, had some live quail shipped there, and turned them loose. These quails have multiplied and spread over a vast district, making our June mornings more perfect by their presence. The quail is a true friend to the agriculturist, as its food is mostly noxious seeds and insects, especially chinch bugs, and the farmer should not allow them to be hunted on his premises. In the spring of 1885 the only song birds that welcomed the home seeker here were the robin and meadow lark. There were but few of the former, but the latter were numerous, filling the air with their loud, clear notes, both day and night. It was a surprise to me to hear them sing at all hours of the night, and, by the way, the song is not quite like that of the Eastern meadow lark. It is stronger, more brief, and has greater variations. Perhaps the windy climate is accountable for this. We missed some of the old, familiar songsters, and especially the thrush. But as civilization ad-

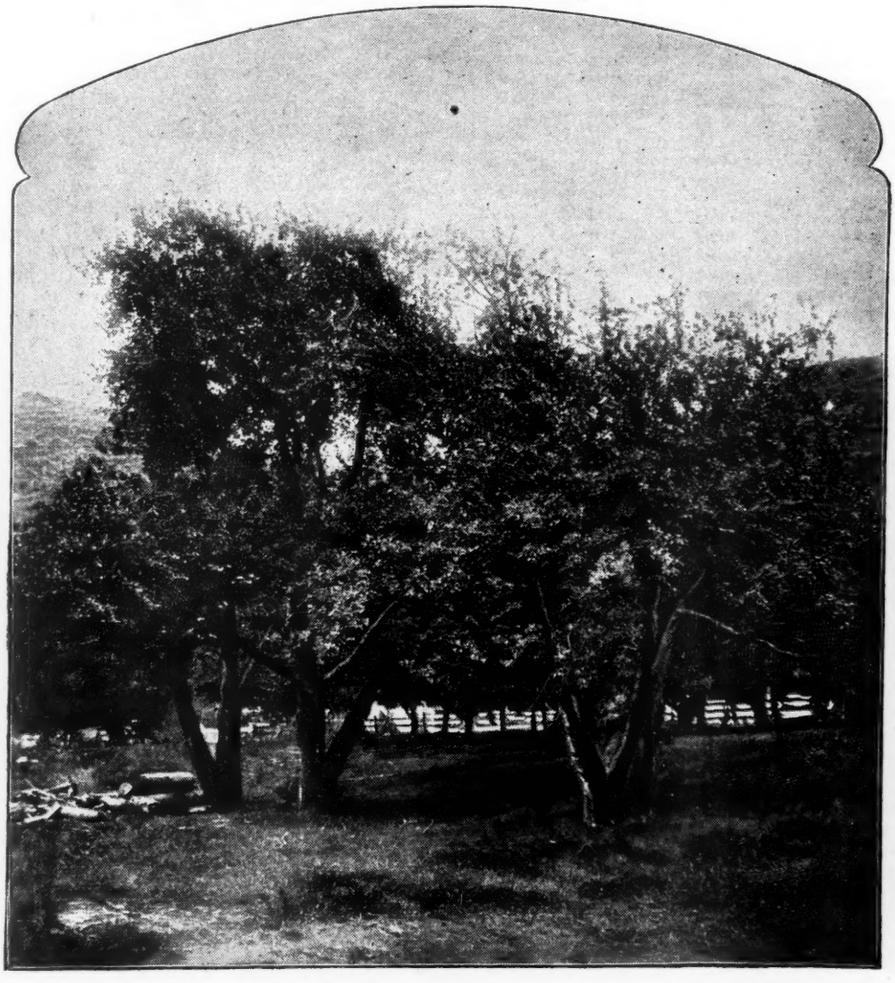
vanced, and trees were planted, the birds flocked, and now they are numerous, and of great variety. The farmer should be the bird's best friend, and with him they ventured to this new country. Seven years ago the pin-tailed grouse were here in countless numbers. I have seen single flocks of these savory birds, which must have contained upwards of a thousand. They were almost as tame as the common barnyard fowl, and the settlers slaughtered them without mercy, and, in fact, it was the means by which many a poor homesteader fed himself and family during the winter of 1885-86.

T. S. ALLISON, Dawes, Co., Neb.

The Mission Apple Trees of Washington.

In the spring of 1891, a report was circulated that the flood caused by the waterspout in Alpowa canyon, Asotin County, Washington, had destroyed the famous "Mission" apple trees planted in 1836 in the Snake River Valley. The writer happened to be traveling at the time, not far from where the Alpowa river enters the Snake river. Arriving at Silcott, the scene of the alleged wash-out, an old woman was found. She went into the ancient orchard and located the trees, which were found to have sustained no further damage than to have had three feet of silt and debris washed up around the roots. The trees were bearing then, the fruit being white in color and sweet to the taste. The woman told the story of the trees as follows: In 1836, Bishop Spaulding came out to the Lapwai mission, in Nez Perces county, Idaho, in the famous Whitman party, bringing the seed from Rochester, N. Y. He presented three of the seedling trees to Chief Red Wolf of the Alpowai Indians, who lived near the mouth of the Alpowai. They were set out by the chief, and have been bearing fruit ever since. They now have the appearance of old oaks. The woman pointed to a cairn made of small stones on a hill near by and said that Red Wolf had been buried there. These trees are the oldest fruit trees in the State. The largest tree is known as the "Mission tree." It was measured and found to be forty-two feet and ten inches high, and the circumference is exactly seven feet. It and its sister trees are as flourishing now as in the days of their youth and yield to their present owner gratifying returns. They are now the property of D. H. Mohler. He says he has more than once plucked from the "Mission tree" alone two tons of apples in a single season and sold them. H. H. Spaulding, a son of the Bishop, now has a fruit farm on the banks of the Snake river. He was born just prior to the Whitman massacre, and is a member of the State Horticultural Board.

EDMOND S. MEANY, Pierce Co., Washington.



THE WASHINGTON MISSION APPLE TREES.

Good Words From Australia.

We are having a lovely season. The wheat harvest in this district was good, both as regards quantity and quality, although the mode of farming is exceedingly slovenly, no manure being used, and the land merely plowed and harrowed once. I have been delighted with the AMERICAN AGRICULTURIST during the last year, and my children look forward to the arrival of it from month to month with great pleasure, and if it arrives a few days late, they wonder what has become of it. I believe every man who has a farm should read the AMERICAN AGRICULTURIST. I wish we had a farmer's journal equal to it in New South Wales, but we have not, and are not likely to for many years to come.

WILLIAM HAWKE, Redruth Villa, N. S. Wales.

Cowpeas in Oklahoma.

Cowpeas are likely to become popular in Oklahoma, for several reasons. They withstand dry weather well, and it is well to consider the fact that dry periods of a few weeks, or even two months, are pretty certain to come every year. Instead of grumbling at "wind and weather," or trying to adapt the country to certain crops, which is beyond our control, let us select crops adapted to the country. For many years, while the virgin soil is becoming disintegrated, the cowpea will be especially valuable, as it grows well on sod or fresh ground. Dr. J. C. Neal and Prof. A. C. Magruder, of our experiment station and college farm, are enthusiasts for their extensive plantings. Last year they had 50 acres of first sod in cowpeas, and claim splendid success, and that, with the dense shade, the sod was as well rotted, and put into as arable a condition as with three years of other crops; but I think this was largely due to very thorough preparation of the ground. It will be a crop for emergencies in this variable country. While in cold, damp soils it would not be safe to plant before June, here we can plant in April, and without much risk as early as March 20th. In fact, I have planted garden beans still earlier, and, although there were three light frosts, they were but slightly injured. Cowpeas can be harvested in time for replowing the ground for winter wheat, as wheat seeding extended the past season from September until June 10th. They can be planted after the wheat harvest, as they will mature for forage in 50 to 70 days, so they are likely to prove a valuable crop in emergencies, when others fail, and a quick maturing one is needed. As the country grows older, they will take the place as a fertilizer that the clovers do in other sections.

J. M. RICE, Blaine Co., Oklahoma.

Truck Farming in Virginia.

Having left Long Island to better my condition as a farmer, my first point was Norfolk, Va., where I have succeeded far beyond my expectations. It seems so different here from the scenes at home at this season. Here, at this writing (April), the fields and forests are green, and nature seems to be making her best efforts. Early peas are out of blossom and in the pod. The last crop of radishes has been shipped, and cabbages are commencing to head. All interest now centers in the berry crop, the average of which is immense, but the yields will not be heavy. In consequence, good prices are maintained—18 to 20 cents in New York. The first Norfolk berries brought, in Boston, from 30 to 35 cents. One farmer here has over 100 acres in berries, but 10 to 20 acre fields are common. It is the best thing in trucking crops here. If I should ever farm on Long Island again, I would go into strawberries heavily. The air here makes a man feel 100 per cent. better. The climate is all that can be desired, and the land better than on Long Island, and more easily managed. An abundance of labor, at low prices, likewise easily managed, renders the South, to my mind, an agricultural paradise. I have but little planted at present. My spinach and sprouts are all marketed. Spinach was unprofitable this year, on account of the extra expense to grow it, caused by the cold winter, and it brought low prices—$1 per barrel, though I struck it well on my last shipment; having planted much of the long standing, I kept it back, and the last shipment brought $1.75 per barrel. I have planted two bushels of cucumber seeds, the crop of which, if it turns out well, at the usual price of $1 per box, will net me $1,000. I have a splendid stand of plants, which now show their third leaf. The plan for sowing cucumbers, followed here, is the drill method. Here we put the fertilizer under the seed at the time of sowing, and, after cultivation, we give them a dressing on each side of the row. I hope in another year I shall be enabled to establish myself permanently here, or else in Charleston or Savannah. My farming here is simply an experiment, in order to test the differences between here and home, and I am fully convinced now that the South affords better opportunities for labor and capital employed in horticulture than any other section of our country. The excellent quality of soil, abundance of labor, and proximity to markets are all in favor of the South. A. L. SIMMONDSON, Norfolk Co., Va.

Chicks Losing Their Appetite.—E. Pickhardt, Westchester Co., N. Y., writes that "all the chicks are hatched apparently healthy, under hens, but the affected ones develop no appetite, or soon lose it, and seem thirsty. They twist their necks and have fits, staggering around, then brighten up again, and finally droop and die. The feed consists of cracked corn, oat-meal, wheat and soft feed." The symptoms point to some affection of the brain, which it is impossible to successfully prescribe for, but the trouble may be due to large lice on the head. For these the remedy is very simple—a little lard rubbed into the down on the head. Cracked corn, unless it is very fine, should not be used for chickens until they are three or four weeks of age. If one uses cracked corn before that time, it should be passed through a fine sieve, and all the coarser particles removed, to be fed to the adult fowls, the finer being used for the chickens. A very good dry food for young chickens can be made by mixing two parts of very fine cracked corn, two parts of oat-meal and one part of ground beef scraps. Mix the ingredients thoroughly but use no water in the mixing. Feed it dry. Wheat will be eaten safely by chickens after they are three weeks old, but the grains are too large for young chicks. Millet is an excellent food and not very expensive. It is fed by many successful breeders of fine poultry, and with the most satisfactory results.

Pruning Pumpkin Vines.—L. L. Fry, McLean Co., Ill.: If you desire to utilize the entire strength of a pumpkin vine in the pruduction of only one or two fruits, then thinning out will be necessary. Wait until there are three or four pumpkins on the vine, then thin out, leaving the most promising. To check the growth of the vine and concentrate its strength, pinch off the end of the main vine tour to six feet beyond the pumpkin. Side shoots may be treated the same, only they need not be permitted to grow any considerable length unless they are to produce fruit. As great size is your only object, it will be best to allow only one pumpkin on a vine, and only one plant to a hill, and after the fruit is set and as large as a man's head, mulch the hill with coarse manure or old hay, and give water in liberal quantities during dry weather. In other words, force the plants in every possible way, but do not overdo the matter by giving them too much water, or manure.

Tomato Blight.—Adolph Roesel, Orange Co., Fla.: Your tomato plants are probably attacked by a disease known under the general name of blight, the stems and lateral branches being infested with fungus, this checks their growth and they soon wither and die. As a preventive, set the plants on fresh soil and where no tomatoes have been grown for two or three years. To check the spread of the fungus on infested plants, it is recommended to spray them with a mixture made by dissolving six ounces of common carbonate of copper in two quarts of spirits of ammonia, and when all the carbonate is dissolved dilute with 40 gallons of water. Apply with an ordinary spraying apparatus or with a large hand syringe with a fine rose. Should this fail to check the disease, try what is called the Bordeaux mixture, made by dissolving four pounds copper sulphate and four pounds of lime in 50 gallons of water. Apply in the same way, and endeavor to reach all parts of the plants with the mixture.

To Secure Fertile Eggs.—S. C. Bennett, Columbia Co., N. Y.: To breed from a trio of single combed White Leghorns is not the best way to get fertile eggs. A Leghorn male is extremely active and able to fertilize the eggs of 15 to 25 hens, and when he is limited to two hens the chances are that he will worry them by his too constant attentions, and the result will be that but few of the eggs will hatch. Add a number of other hens to the flock, and if there are no Leghorn hens to add, use common hens, those laying an egg that can easily be distinguished from the eggs laid by the Leghorns. In this way Leghorn eggs can be selected for sitting, and fertile eggs can be secured. If there is but the trio of fowls the plan to be pursued would be to admit the male to the pen where the hens are, for a short time each day, say 30 minutes or an hour, either in the morning or at evening, and then remove him to his place of confinement. It is some trouble to do this, but it really pays to take trouble if one wishes to secure fertile eggs.

The Wild Onion Pest.—John Bierhaus, Knox Co., Ind.: We do not know positively to which one of the several species of wild onions you refer, but presume that it is the *Allium vineale* early introduced by emigrants, and now run wild throughout nearly all of our Northern States. Tradition says that this species was introduced by the first Welch emigrants to Pennsylvania, for the purpose of supplying an early pasture, but it is far more likely that the seed or bulbs have been imported with various kinds of seeds and roots, and in this way have become widely disseminated. It is certainly a great pest in meadows, pastures, lawns, and gardens almost everywhere, and in grain growing regions it has, in some instances, become so abundant in wheat fields as to seriously injure the flour, the small bulblets borne on the apex of the stalks, being gathered with the grain and passing through the sieves with it. The only practical means of getting rid of this pest is to follow some system of rotation, where corn or some other hoed crop will occupy the land for at least two seasons, giving clean cultivation to kill out the bulbs.

Leghorns for Warm Climates.—A. Linn, New Orleans, La.: For your latitude and for the production of eggs, there are no better varieties of fowls than the single-combed Brown and Black Leghorns. They are prolific layers, and the absence of cold weather does not make their high single combs objectionable. The rose-combed Leghorns are equally as good layers, but you would gain nothing by changing from those you have to the rose-combed varieties. If you lived in a cold climate, where in winter the thermometer was often 10 or more degrees below zero, the change would be advisable, for a rose comb is less liable to become frost bitten than a single comb.

Tomato Plants in Cans.—W. D. H., Escambia Co., Fla., writes us that by his method of propagating strawberry plants, he is able to purchase a few pot grown novelties, costing from 75 cents to $1.50 per dozen and grow his own plants in very short time. "The 'tin cow' is the favorite in Pensacola, consequently condensed milk cans are abundant. I put them in the fire and melt the top and bottom out and the sides loose. I set these in the ground, level with the surface, put the layer on this with just enough earth to hold it in place. In about a week it is well rooted, when I cut it loose from the main plant, lift it out of the ground with a trowel, peel off the tin, and I have a solid clump of earth which is set out without the least check to the growth of the plant and without breaking a root. These throw out other runners, and my plants increase faster than compound interest. With a small outlay I can soon have a bed of the finest berries. I like these tins better than pots, and they are certainly cheaper."

Cool Drinking Water For Fowls.—R. B. Curtis, Cobb Co., Ga.: You should keep the drinking water out of the sun. Water warmed in the sun, either because it develops some sort of germs, or because its warmth is a laxative, is a frequent cause of bowel complaint. The dishes in which it is given, should be kept scrupulously clean, the water furnished fresh and cool three times a day, and placed out of the direct rays of the sun. Very simple contrivances may be used to keep it out of the sun, the simplest being to lean a short board against the fence and set the dish underneath it.

A Problem in Draining.—C. E. Swenson, Chisago Co., Minn.: As so much land is involved in the case in question, it would be worth while to make a complete job of it. This can only be done satisfactorily by cutting through the high ground to get a tile drain through it. It will not be necessary to dig the whole depth, as a tunnel may be made through the crest of the high land, at half the cost of digging a ditch so deep. If the fall from the swamp is only two inches to the hundred feet at the first, this will be enough to make a sufficient flow, as the greater fall at the lower end of the drain will draw the water from the upper part, and keep up a current, to prevent deposit in the drain. In digging the tunnel, the ground overhead should be kept from caving, if it is loose, by two planks laid on supports made like a trestle, or held up by cross pieces, supported by short posts. If the distance through the high ground is but short, it may be cheaper to dig to the full depth, but even in this case, it will be safe to support the sides with planks and cross braces. The tile for all this land, for the outlet, should be eight inches; if there is a considerable quantity of water to be carried off. The smallest tile should be two inches in diameter. These may be laid 40 feet apart, and the lower half of them should be three inches in diameter. These should run down the slope and into a six-inch drain, which would discharge into the eight-inch outlet. An eight-inch pipe is nearly as capacious as two six-inch ones, and thus would take all the water from the two six-inch pipes, allowing for the increased velocity in the larger outlet drain pipe.

Vermin on Chicks.—S. S. Lee, Essex Co., Mass.: Evidently the trouble with your chickens is due to vermin, and especially to the large gray louse that frequents the head and the upper part of the neck. It is not strange that you did not see them, for they are not easily discernable, but if you will take a bit of lard, the size of a marrowfat pea, and rub it into the down on the head and the upper part of the neck, you will see in a minute these deadly parasites backing out and dying. They breathe through spiracles—little holes along the sides—and the lard clogs these up and the lice are choked to death. There is hardly another pest that is so destructive of young chickens as this, and yet it is the easiest one of them all to destroy.

Blighted Raspberries.—Henry McGrath, Macon Co., Ill.: We are not certain as to the cause of the blighted or undeveloped fruit on your raspberries. It may be the result of the depredation of some insect, as there are several species of plant bugs, which might cause the withering of the fruit buds. There are also fungus diseases which would produce similar results, but, in the absence of specimens of the injured plants, we are unable to say what is the matter with the plant. You might try spraying the plants with some of the many fungicides and insecticides now in common, if not in almost universal, use among the fruit growers of your State. Look for insects among the plants at the time they are in bloom, and if any are found, send us a number of specimens for identification.

Lightning Rod Bean Poles.—A. G. Chase, Leavenworth Co., Kans., suggests to those of our readers who may have any disused lightning rods or sections of them, that they manufacture some first class bean poles from them; especially from the spiral kind. "I cut them in sections of five and one-half feet and insert them about six inches in the ground. I have had some of galvanized iron in use for several years; that as yet show no signs of wear, and have never had one of them to blow over. I have used them with heavy Lima beans. Where houses or barns have been burned, the rods are generally destroyed for their original purpose; but cut in sections and straightened, they make most excellent bean poles; or with a few yards of wire and a little ingenuity they can be transformed into trellises for ornamental vines and climbers of all kinds, especially strong growers like the Madeira and cypress vines."

Remedy For Bitter Milk.—L. Haynes, Travis Co., Tex.: It may not be a weed that is the cause of this flavor in the milk, or it may be; it would have been a help to understand this case had a specimen of the weed been sent. It is difficult to overcome the effect of the flavor of the food on milk, as the flavor of plants is due to an essential oil in them and this will always go to the butter, and, as it is not volatile, it cannot be got rid of by aerating the milk. If the plants complained of can be exterminated in any way, this might be the best remedy; if not, the addition of a teaspoonful of a solution of saltpeter to a four-quart pan of milk may neutralize or destroy the objectionable taste. But there is a special bitter flavor in milk that is caused by a peculiar fermentation, due to a special organism that is taken in by the milk in some way. Sometimes this bitterness is due to biliary disorder of the cow, and this itself may be due to an organism in the blood of the animal. If this should be the case, the remedy is to give the

cow one ounce of hyposulphite of soda in a quart of linseed or oatmeal gruel, and repeated the second day. It is sometimes the case that heating the milk to 150 degrees will remove the bitterness, and a trial of this is suggested. This is done as soon as the milk is strained into the pans, and the pans are then set away as usual. The heating kills any germs in the milk, and may volatilize any odorous impurity.

Bisulphide of Carbon and Weevils.—V. R., Bedford City, Va.: Bisulphide of carbon is used effectually for destroying weevils and other insects attacking stored grains, and we think you will find no difficulty in keeping the weevils from injuring your corn by its use. But the grain will need to be stored in a rather tight bin or crib, in order to retain the fumes of the bisulphide long enough to destroy the insects. After the corn has become thoroughly dry in the fall, remove it to your tight bins or cribs, either in the ear or after it is shelled, whichever is the most convenient. Before the corn is put in, place one or more quart jars, filled with the bisulphide, on the floor, leaving the corks out to allow the fumes to escape, but, to prevent grain and dirt falling into the jars, tie a piece of muslin over the top, and then fill in around the jars with grain, in order to keep them in an upright position. The number of jars required will depend upon the size of the bins and the quantity of grain to be stored. The fumes of the bisulphide will take fire and an explosion may follow if you work about the open jars with a light at night. When the grain is wanted for use it may be taken out and aired, and all smell of the bisulphide will soon pass off.

How to Remove Skunk Odor.—Oliver Arenson, Montgomery Co., Pa.: One can remove the skunk odor from a Newfoundland dog by covering him with fresh earth. It is not cruel. Bury him lightly and frequently. Dig a large, long excavation in a moist loam, and, by teaching the dog that the operation is for your pleasure and his good, he will submit. Put him in the dug-out place, with a good, meaty bone, and, as he lies, hold him by the head, while some one shakes slowly over him, from a coarse sieve, enough earth to lightly cover the whole body up to the head. After being accustomed to the earth bath, the dog will willingly submit, especially if the day be warm. It is the fine, sifted earth that is the deodorant, one of the best that is known. A few moist earth baths will remove the offensive odor of the skunk. Carbolic acid, chlorinated lime, and other disinfectants, may be more offensive than the skunk odor.

The Codlin Moth. — Subscriber, Wayne Co., N. Y.: You are not the only man who has been puzzled in trying to find out how the caterpillar of the codlin moth was poisoned by the Paris green used in spraying apple trees. The poison does not kill by contact with either the eggs or worms, as they are usually called, but the latter must actually eat a particle of it in order to produce the desired effect. The egg deposited in the calyx by the moth remains there for two weeks, or even longer, before hatching, and the minute worm emerging therefrom feeds for several days on the materials near at hand within this calyx, before it becomes large and strong enough to bore into the young fruit. It is while taking its first few meals in life that it gets hold of some particle of the Paris green, and is killed. This is why spraying the trees soon after the petals of the flowers have fallen is generally recommended, and is certainly advisable If it is delayed until the worms have become large enough to enter the fruit, they are then beyond the reach of any poisonous solution or compound.

Unfruitful Plum Trees.—Louis Rastetter, Allen Co., Ind.: The unfruitfulness of your two yellow-egg plum trees is somewhat of a mystery, because trees of this variety, when healthy, usually begin to bear when four or five years old, at the very latest, even if the curculio sting all the plums, and cause them to fall before maturing. But you say that your trees have "never as yet shown a blossom." Under the circumstances, we would certainly try root pruning, as this may check their rapid growth, and perhaps insure the development of fruit-bearing spurs on the branches. To root-prune the tree, dig a narrow trench entirely around it, and about four feet from the stem, cutting all roots exposed in the digging of this trench. The trench may be the width of a spade blade, and twelve to eighteen inches deep; and if only an occasional root is found at a distance of four feet from the stem, the circular trench may be of less diameter, but we think that one of eight feet will answer for trees of the age you name. If the root pruning fails to force the trees into bearing, we would either dig them up, or regraft with some other variety, or get scions from some bearing tree.

Fruits in California.—G. C. Swan, San Diego Co., Cal.: 1. The proper time to prune and transplant olive trees, as well as orange, lemon, and other evergreen trees growing in warm climates, is when in a dormant condition; that is, after they have completed the season's growth. This may occur early or late in the autumn, but there is always a season of rest among trees native of hot climates, and this usually occurs before the rainy season sets in; and, at the beginning of the annual downpour, transplanting should be attended to if any is to be done during the year. 2. The pistillate flowers on the English walnut are fertilized the same season that the nuts are perfected.

Overflowed Meadows.—Charles Ewing, Idaho: We are inclined to think that after the water has subsided from your newly seeded meadow, you will find much of the timothy grass killed out. There are very few species among the cultivated grasses that will withstand a month's submersion, in spring; but redtop and Rhode Island bent may. Much depends upon the weather, and the temperature of the water at the time of the overflow. If the water is warm, the grass will decay rapidly, especially if the leaves are young and tender. The wild bog grasses, that grow naturally in low ground, are not injured by spring overflows, but they are of little value for either pasture or hay.

Soft Droppings of Chickens.—J. B. Reed, Lucas Co., Ohio: The trouble with your chickens is caused by too laxative food, which makes the droppings soft and sticky, and causes these to accumulate at the vent, and actually prevent the voiding of the excrement. When you see the vents thus sealed up, remove the accumulation of droppings, pick off the down around the vent, and apply a little lard to the skin. It is also advisable to make a slight change in the diet, and to add a little astringent to the water. Nothing is better than a few drops of tincture of iron in the water, or a few particles of sulphate of iron dissolved in it. Sulphate of iron is known as copperas, is a green crystal, and costs but a trifle per pound. A pound will last a long time.

Shipping Eggs Long Distances.—B. L. Dyer, Los Angeles Co., Cal., inquires if eggs can be safely shipped for hatching from the State of Massachusetts to California. They can, although during so long a journey there is more or less danger of having the vitality injured, by rough or careless handling, while en route. Breeders are now so well acquainted with approved methods of packing, and have provided such excellent boxes, baskets and fillers for this express purpose, that they ship safely to almost any point. If the buyer, immediately upon receipt of the eggs, will take the precaution to carefully unpack, and let the eggs rest in a cool place, upon their sides, for a period of from twenty-four to seventy-two hours, according to the distance traveled, before setting them, he will frequently find them to hatch as well as in the yards in which they were laid. A great deal depends upon the handling the eggs receive while undergoing transportation. If they have been carefully handled, and were fresh and fertile when sent out, after a proper rest they should hatch well. We know of one Eastern breeder who has shipped eggs to Scotland, and the buyer reported a moderate hatch, even after an ocean vogage; and an ocean voyage seems to shake the vitality out of eggs much more completely than one by rail.

Four Crops in Eight Months.—L. T. Morgan, Silver Bow Co., Mon., writes us that, when living in Delaware, he often raised four full crops between March first and November first, in the following manner: "Heavy manuring with barnyard or compost manure in the fall, well plowed under. Ground plowed deep in spring and planted to Early Rose potatoes, in rows two feet apart, harrowed flat. White radishes sown broadcast at the same time; radishes, coming off before potatoes are hilled up. As soon as potatoes have last working, Winningstadt cabbage, set in alternate vacant rows, between potato rows, potato vines being laid over in vacant rows, if too strong and depriving the cabbage of sun and air. Potatoes dug as soon as well matured, ground worked with horse cultivator, and turnips sowed between cabbage. This gave four full crops for early market, at the best prices. Sometimes I varied by sowing early peas and snap beans, in place of cabbage. I do not think any section of country produces more to the acre, with proper fertilizing and labor, than the upper counties of little Delaware."

Garden Annuals.—G. A. Cooper, Queens Co., N. Y.: The flower garden where annuals only are employed may be made most interesting by observing the following rules. Sow the seed thin, cover but slightly, keep the soil light and fine on the surface, do not let the plants stand too near together, cut down all plants as soon as out of blossom, remove dead leaves, tie up to sticks the drooping heads and branches, let all be neat and orderly, and have a reserve garden for young plants, to be set in the place of those that have completed their work and dropped out.

Planting Tulip Bulbs.—E. B. James, Essex Co., N. J.: Tulip bulbs must be planted in the fall, the sooner after September first the better, as they then commence root-growth, which is a necessary preparation for spring flowers.

Geraniums for Winter Flowering.—L. Harris, Kings Co., N. Y.: To have flowering geraniums in winter, repot your plants in spring, reducing the size of the ball, without much injury to the roots, putting the plant back into the same sized pot, with fresh soil. Cut all the branches down to the main stem, or within a leaf or two of it, in order to make a stocky, well-branched plant. Plunge the pot in the open ground, water in case of very dry weather, and do not allow the plant to flower at all during summer. Bring in upon the approach of frost, and the plant will flower all the winter.

Japanese Rice.—In response to the inquiry of a subscriber from South Carolina, Messrs. Dan Talmage's Sons of New York write us: "So far as we know there is no Japanese rice seed in the U. S. We might remark in this connection, that according to our experience and observation, it is not nearly so well suited to the planter in the U. S. as it is in Japan. The reason that it does not thrive so well in American soil is that the grain does not receive the benefit of almost a hand culture as is the case in Japan. The outcome here is a poor imitation of the original. We might further remark that American seed sent to Japan is made to produce much more finely than here, the grains being nearly half as large again."

A Good Succession of Sweet Corn.—Prof. Jas. Troop, Indiana Agricultural Experiment Station, experimented with 50 different varieties of sweet corn and recommends the following as especially desirable for a succession: — Cory, Concord, Ne Plus Ultra, Stowell, and Black Mexican.

Air-Slaked Lime For Cut-Worms.—Wm. Ferguson, Essex Co., Mass., writes us that after trying a variety of substances for destroying cut-worms he has found air-slaked lime effective and reliable. By throwing a pinch of lime at and around the collar of the plant, enough to whiten the stem and soil, the worms do not injure the plants. At least this has been the result the past two seasons during which it was tried on his farm.

Chincoteague Ponies.—S. S. Bowen, York Co., Me.: On the banks or sand bars that divide the Atlantic Ocean from Pamlico Sound, North Carolina, just inside the lighthouse that marks out to the mariner dreaded Cape Lookout, there is to be found a hardy race of ponies known as "Bankers." These ponies have lived there as long as the oldest inhabitant. Entirely surrounded by deep water at all seasons, having no communication with the mainland, and being barren of vegetation, save a scanty growth of sedge grass and low shrubs, the banks have remained uninhabited, except by these ponies, which seem to thrive and multiply, in spite of the hardships to which they are exposed. From the fact that they are larger and more symmetrical than the Shetlands, and much finer and more tractable than the Mustangs of the plains of Texas, it is probable that they contain the blood of the Arab. These sea island ponies are very hardy.

SCIENCE IN FARMING.

Cost of Milk.—That the weighing scales and the fat tester are greatly in advance of any outward indication of the producing powers of a cow, is shown by the experiments with 20 dehorned cows at the New York Cornell station, by H. H. Wing (B. 52). The ugliest cow was the first in milk and the second in butter-fat. A grade Short Horn produced butter-fat at lowest cost, then two Jerseys, followed by two Holsteins, next a grade Short Horn followed by two Jerseys, and then by two Holsteins. A grade Holstein produced milk at least cost, followed by a grade Shorthorn, then by four grade Holsteins, a grade Jersey, two grade Holsteins, and a grade Short Horn. The records of the herd for a year indicate that, with fairly good cows carefully fed and kept, milk can be produced for 65 cents per hundred weight and butter-fat for 16 cents per pound for the cost of food consumed. Individuals of the same breed varied more widely in milk and butter production, than did the breeds themselves. The larger cows consumed less pounds of dry matter per 1,000 pounds of live weight, than the smaller cows. In general, the best yields of milk-fat were obtained from cows that gave, at least, a fairly large flow of milk. In general, the cows consuming the most food produced both milk and butter-fat at the lowest cost. For the production of milk and butter no food was so cheap as good pasture.

Celery Leaf Diseases.—Investigations at the New York State station by S. A. Beach and C. E. Huan (B. 51) show that when sprayed celery is stripped and ready for market, that the sprayed plants are no more poisonous than the unsprayed. Thus copper mixtures of the usual strengths may be used without fear of poisonous results. Celery Septoria attacked the seed as well as the foliage. The experiments indicate that strong Bordeaux mixture (three pounds copper sulphate, two pounds lime and 22 gallons water) is to be preferred for celery leaf spot. It is recommended that diseased seed be rejected; that plants be thoroughly treated with strong Bordeaux mixture in the seed bed; that the treatment with Bordeaux be continued from transplanting time to blanching time if there be reason to expect attacks of leaf spot; and that the refuse of a diseased crop be not allowed to rot on the ground if it is expected to grow a crop of celery there the following year.

Tomato Culture.—The average productiveness of tomato plants, in both number of fruits and weight of product, appears to be in direct proportion with the earliness of setting in the field, reports W. M. Munson of the Maine station (R. 92 III). Little or no benefit seems to be derived from the practice of bagging fruit. The individual variations of plants is large. Crossing between small fruited plants of very prolific habit and the larger fruited sorts, is a promising method of securing valuable varieties which shall be sufficiently early for the best results. Plants grown from seeds of small fruits—those receiving little pollen—were slightly inferior to those grown from large fruits from the same parent plant. The best variety grown last year at the Maine station, was the Optimus.

Responsibility for Scientific Research.—The reliability of an investigation depends so much upon the personal accuracy of the investigator, that no institution or executive head can safely assume the responsibility of published results without a just mention of the investigator's name. We have followed this rule in reports of station work, and heartily second the following editorial statement of W. Frear in *Agricultural Science* (VII. 3, 1893, p. 146): The practice to which some stations adhere, of issuing bulletins without any indication as to their authorship, or as to the origin of the plan of research, or as to participants therein, is to be decidedly condemned. The previous record of an investigator has much to do with the judgment of the scientific world upon the merits of his subsequent work; more especially when the popular presentation of the latter prevents a full statement of the precautions employed in the conduct of the experiment. The public, therefore, as well as the author, has a right to demand that the name of the investigator accompany his published statements. It is difficult to conceive of any compensatory advantage arising from its suppression, either to the institution or to the principal administrative officer or officers. Allowing the fullest mention to the subordinate, the superior [officer] is sure to receive a full measure of credit for his relation to the labor, with an added credit for fairness. In the light of these facts, it is greatly to be hoped that this affectation of anonymity may die an early death among station publications.

Fertilizers For Corn and Potatoes.—For five successive years, in the fertilizer experiments at the Kentucky station by M. A. Scovell, (B. 45), wherever potash was one of the ingredients of the fertilizer used, whether on corn, potatoes or tobacco, there was an increased yield. Where phosphoric acid or nitrogen, or both, were used without potash, there was scarcely any increase in the yield over those plots, receiving no fertilizer. There was a profit in the use of fertilizers in every instance where potash was one of the ingredients. There was a loss by the use of commercial fertilizers where potash was not one of the ingredients, except in the tobacco experiments. Potash fertilizer applied on maize fields has shown its effect for four seasons after the application.

Treatment of Injurious Insects.—In general, noxious insects must be combated as soon as their depredations can be seen, but Herbert Osborn and L. H. Pammel of the Iowa station, recommend (B. 20) that as soon as blossoms fall, apples and plums should be sprayed for codling moth and plum curculio. Spray strawberry plants if infested with slugs. In early summer, plant lice may be numerous on plums and cherries which should be sprayed with kerosene emulsion. In July, spray potatoes with London purple or Paris green, if infested with potato beetles. In August and September, cabbage worms may begin to appear and can be treated by spraying with hot water, or with pyrethrum in water, or as a powder. Cherry slugs and the leaf-eating caterpillars and other insects on plums and other trees may be sprayed with London purple. Kerosene emulsion may be used directly on the insects, and will kill all it touches by entering the breathing pores.

Southern Tomato Blight.—In Florida and other Gulf States, there has been much loss from a blight of tomatoes, which is easily distinguished from the other diseases of that plant, according to P. H. Rolfs of the Florida station (B. 18). The first sign is the wilting of a leaf near the top, as if it were suffering from drouth. Other leaves and soon the whole plant is affected. There are no spots or downy outgrowths. The disease is fatal, no remedies being known. As a preventive, tomatoes should not be planted on land which was affected with blight the previous year. It is also recommended that on such land, neither summer cow-peas, summer squash, cabbage, egg plant, common potatoes, muskmelons, nor water-melons be planted. As soon as a diseased tomato plant is detected, it should be burned on the spot with straw, without moving or piling the affected vines.

Composition of Asiatic Rice.—That the commercial value of rice has no relation to either the chemical composition, or size of the grain, is shown by the analyses made by S. Machida, O. Kellner, and M. Nagaoka, at the Tokio station, Japan (B. 12). One thousand grains of the best Sekitori rice from Ise province weighed just over 19 grams, while medium weighed over 18½ grams, but medium good from Mino weighed most, or 19½ grams. The crude protein in rice from Corea was 9.19 per cent., Siam 10.01, Anam 8.75, Japan 10.12. Of Japanese rice, 578 specimens were collected, carefully mixed and analyzed, with the following results: Water, 13.54 per cent. In the dry matter: Crude protein 10.12, crude fiber 1.12, crude fat 2.52, nitrogen free extract 84.79, ash 1.47. Total nitrogen 1.617, albuminoid nitrogen 1.495, non-albuminoid nitrogen 0.122. In 100 parts of ash: Potash 22.47, soda 4.55, lime 2.93, magnesia 12.60, ferric oxide 1.63, phosphoric acid 48.31, sulphuric acid 0.23, silica 6.53, chlorine 0.91 per cent.

Spurry as a Forage Plant.—Spurry (*Spergula arvensis*) is an annual plant of the Pink family, which is cultivated in France and Germany as a winter pasture for cattle, sheep and hogs. O. Clute and O. Palmer, of the Michigan station, report (B. 91) that the soil for spurry requires the same preparation as for red clover, and the much smaller seed may be planted similarly. Six to eight quarts per acre should be sown for fertilizer or for forage, the thick seeding giving an even field of fine pasture, and a heavy sward when cut for hay. It should be mown for hay after the seed has formed, but before it is ripe. When grown for seed, it branches more and gives a larger crop of better seed if only four quarts per acre are sown. Thresh the same as red clover. When the seed harvest is late in the fall, enough seed will shell out to set the next year's crop if the stubble be harrowed. In warm, moist weather, the seed sprouts quickly, and the field shows green on the third day from sowing. It is ready to mow for hay in about six weeks, and ripens seed in eight weeks. It is in best condition for pasture from four to six weeks after sowing, though, if necessary, animals can be turned on it much sooner. Cattle, sheep and poultry are very fond of it, either green or dry, and the butter, mutton, and eggs are of good flavor. Spurry grows from one to two feet high, yields from one to two tons of forage per acre, and from eight to twelve bushels of seed. As a fertilizer, it is next to red clover, withstands drouth and winter cold well, and is recommended as a fertilizing crop for light, sandy soil, to yield nutritious forage at the same time.

Shrinkage of Stored Grain.—In deciding whether to sell harvested grain, or to store for higher prices, the question of shrinkage from drying and from attacks of vermin, is an important one. C. E. Thorne and J. F. Hickman at the Ohio station (B. 16. IV, 1.) selected 100 pounds of ear corn at husking time from each of 38 varieties. The 100 pounds of maize were weighed out when husked and placed in a loose box in a mouse-proof room, remaining there to dry until in February, when it was again weighed. The average loss in weight of all 38 varieties was nearly one-tenth or nine and one-third per cent. The medium sized yellow dent varieties lost the least, or five and two-thirds per cent. The large yellow dent came next with a loss of just over 10 per cent. Then followed the large white dent with a loss of over 10¾ per cent. The mixed dent lost nearly 12 per cent., and the medium sized white dent lost most, or over 12 per cent. The individual loss varied from two per cent. in the yellow King of the Earlies, to 22½ per cent. in the Mammoth White Superior. J. F. Hickman selected samples of each of 20 varieties of wheat (B. 42) and in August placed them in small boxes, the two sides and ends of which were made of half-inch pine, thoroughly seasoned, the bottom of window screen wire and the top of glass. The full boxes were numbered, weighed and buried for a year in a bin of wheat, after which they were left in one corner of the bin without any covering until the end of the third year, when it was found that six, or nearly one-third, of the 20 boxes were badly injured by insects. The other 14 boxes were weighed in August, and showed a loss in weight from three year's storage of nearly one-fortieth or two and one-third per cent. The loss varied from nothing in the Hungarian wheat to nearly five per cent. in the Bearded King. A similar test through the six months, from January to July, showed a gain in weight, caused by weather conditions.

Crops for Alkali Soils.—The only sure remedy for alkali is perfect underdrainage and deep tillage. C. W. McCurdy of the Idaho station, reports (B. 3) that surface washing, in any form, without such treatment, affords only temporary relief, as the alkali will come up with the soil moisture, and be left on the surface by evaporation. Alfalfa is a valuable plant for alkali soils, the dense growth shading the ground, and the roots absorbing nearly all the water and dissolved salts. Root crops potatoes, carrots, turnips, cabbage, beets, sowed corn, and other silage crops, may be successfully grown. The small fruits and the grapes, pear, prune, apple and peach may be profitably raised where there is but little alkali. Alkali contains saleratus, Glauber's salts, saltpeter, sal soda, baking soda, plaster-of-paris, common salt, and other chemicals liberated by soil action.

Creaming Diluted Milk.—A loss of fat occurs in the skim milk when dilution is practiced, according to C. S. Plumb, of the Indiana station (B. 44). This loss is increased by the use of cold water. A larger amount of cream is secured by dilution, but the fat test shows the increase in weight to be due to water. The skim milk is poorer for feeding. It is safe to assume, in the light of our present knowledge of the subject, that the dilution of milk to promote creaming is not to be recommended.

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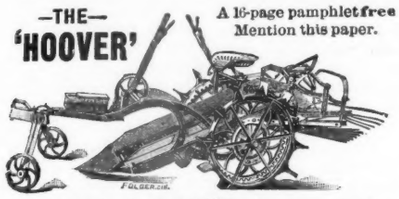

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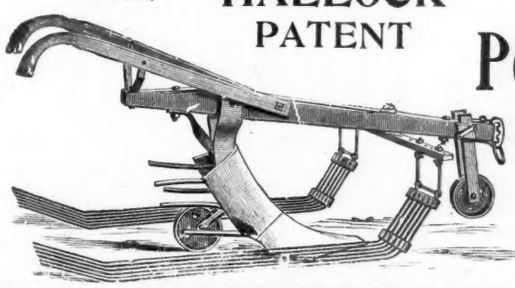

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FARMING IN FOREIGN LANDS.

The cultivation of the banana is being given up in Fiji in favor of sugar growing.

An invasion of caterpillars made its appearance in Yoone, France, and the insects have eaten up the pasture and left the fields bare.

The plague of locusts, which has for several years wrought such mischief in Algeria, does not seem likely to be less disastrous this year.

The Indian tea crop for 1892-93 was 113,687,000 pounds, as compared with 120,000,000 pounds for the 1891-92 season, and 115,000,000 pounds for the 1890-91 season.

The bee keeping industry has obtained a good footing in Queensland, where the department of agriculture is inquiring as to the market for honey in London.

Edinburgh is supposed to have the largest cow population of any city in the world, there being 22,000 cows in that city. Dublin has 11,000 and London 8,000 cows.

An attempt to introduce into England some species of the eucalyptus that grow at high altitudes in Tasmania, and are accustomed to severe frosts, has resulted in failure.

The success of the three experiment farms in Manitoba, Assiniboia and British Columbia, is causing Canadian farmers to urge the government to establish a larger number.

The government of Bengal, India, is interesting itself in the establishment of dairy farms in connection with the lunatic asylums, one having been successfully worked since 1889.

Cold spring and late rains retarded the cotton crop of Egypt, a large portion of which had to be resown, and the crop is fully a month later than in 1892, with the acreage about the same.

On small French farms, the farming is extraordinarily skillful. The land is far cleaner than on most farms in England, and there is dextrous economy in laying out crops in rotation and in the use of chemical manures.

The constant operation of a number of boiling down establishments in New South Wales is having effect on the sheep markets; higher prices have ruled for the better class of sheep, and the market for sheep skins has been lively.

The dry air and sandy soil of the interior of Australia suit the constitution of the camel, and there is plenty of the salt seasoned foliage in which that animal delights. Sheep eat the common salt bush, and the camel enjoys it.

Every portion of the grapevine is used in Switzerland, the stems and leaves serving as food for the cattle, while the skins, after being pressed and wedged into round molds and then dried, are used for fuel, burning somewhat as peat does.

The whole bulk of tobacco produced in Cape Colony, South Africa, does not exceed 50,000 pounds annually in dried leaves. The majority of the farmers are not in favorable circumstances, and the culture of the weed is of the most primitive description.

The German Society of Agriculture, in connection with its section for agricultural implements, intends to hold a show of petroleum motors for potato harvesting machines in the fall of this year, and for potato planting machines to be tested in May, 1894.

During the Queensland flood, the rainfall on January 31st was 10¾ inches. On February 1st over 20 inches fell. On February 2d, the enormous amount of 35¾ inches of rain was registered, and within four days there fell the unprecedented quantity of 77 inches of water.

The English importers of Australian frozen meat advise that the animal heat should be allowed to escape from the carcasses before they begin to be frozen. The London market for colonial meat has been greatly depressed, owing to heavy shipments from the United States.

No rain fell in Hungary from the middle of March till near the end of May, and during that time the north and northeast winds dried the soil during the day, morning frosts absorbed the underlying moisture, and the sun had not sufficient power to warm the land.

The average yield of Hawaiian sugar cane fields has never exceeded four tons of sugar to the acre, and to obtain this requires not only good field work but the highest skill in every department of the sugar mill. The extraordinary yields reported of six, eight, and even ten tons of sugar per acre, are only from very small tracts in exceptionally favored localities.

German crop reports show that winter sowings and clover fields suffered from continued night frosts and cold north winds well into May. Where the land was high, beets were completely frozen, and had to be plowed up. Rye suffered on light soils, and early crops of rye were attacked by fly.

The central society of agriculture of Hérault, France, promises that a laboratory for agricultural analysis shall be annexed to the chemical laboratory of the national school of agriculture at Montpellier in order to deal with chemical manures, the use of which is becoming greater in that department.

Barley is an important crop on the high plateaus of the interior of Mexico, but the average yield per acre is not large, as compared with the barley regions of the United States. It is often raised without irrigation, and when rains do not fall in due season the crop is wholly or partly lost. The average price at which the crop sells is rather more than 50 cents per bushel.

It is proposed to open five farm schools in the Madras presidency of India, all to be under governmental control. The idea is to erect school houses in which practical and theoretical teaching of agriculture and veterinary science will be given, the curriculum to extend over four years, the schools and farms being under the immediate management of the director of agriculture.

Owing to cold and want of rain, spring wheat was kept from sprouting in Germany, early in the season, rye suffered much from cold, and about one-seventh of the area sown was plowed up. Winter wheat and clover did not suffer so much. In some sections night frosts did much havoc, and the young clover leaves were frozen entirely. A continuance of warm weather was greatly needed for the well-being of summer sowings.

It has been stated that cheeses, bearing date of 1660, are still to be seen in Switzerland. In some parts of the country, cheese forms the staple food of the people, and the laborers are often paid with it. There are no fewer than 5,500 cheese making factories, and nearly 13,000 tons are exported annually, the value of which is over $7,000,000. Exports of cheese to the United States are about 5,000,000 pounds, at an invoice valuation of $700,000.

There is a very great variety of soil in British New Guinea. There are flat alluvial river lands, suitable for rubber growing; flat, wet, marshy land fit for planting rice; river bottom land fit for growing sugar cane or maize; hilly country of limestone conglomerate and slate, suitable for coffee or tea; and there are also fine forest patches of large shady trees on rich soil, well adapted for vanilla and cocoanut. Sago grows in the swamps all over the possessions, and beans seem to be indigenous.

Returns from the vineyards in Victoria, Australia, show a considerable increase in the area planted to vines last year; also that Australian raisins are beginning to assume some importance. The figures are as follows:

	1891.	1892.	*Increase*
Vines planted—acres..	20,585	27,549	6,759
Wines made—gallons..	2,008,493	2,114,236	105,743
Brandy made— ". ...	18,665	65,750	47,085
Table grapes sold—cwt	63,535	64,010	475
Raisins made—lbs.....	51,000	98,340	47,340
Currants made—lbs....	3,317	7,585	4,268

There are two varieties of the Castor bean grown in India. One form is a tall bush or almost a tree, a perennial grown as a hedge plant, or to afford shade around fields in which more delicate crops are being cultivated. This variety yields a large seed and abundance of an inferior oil. The other variety is an annual plant, sometimes grown as a pure crop, though more frequently in rows through a field containing other crops. It produces a small seed, yielding a superior quality of oil for commerce and pharmacy.

The New South Wales department of agriculture has shipped to England 10 casks of grapes containing 50 pounds each of the varieties of the White Muscat of Alexandria, Black Muscat, Wantage, St. Peter, Black Prince, Champion Muscat, Doladilla, and Gordo Blanco. Each of those varieties is thick in skin and open in the bunch, and therefore good for export. Half of the consignment was packed in cork dust, and the other half with kiln-dried sawdust from New South Wales cedar and pine. It is hoped that the latter packing will be found as efficacious as the cork dust, which proves very expensive in New South Wales.

Owing to the increasing spread of rinderpest in Russia, a congress of veterinarians and others was held by order of the ministers of war and of the interior, when it was decided that the infected districts were to be closed and all traffic in live stock stopped; that the diseased animals should be slaughtered, the owners receiving compensation; and that several hundred new veterinarians be appointed.

Recent shipments of Australian butter to London showed that a temperature of 18 degrees is preferable to 32 degrees in the cold storage chambers; also that paper packing was insufficient. The cheese market in London has been investigated, and it is found that the quality of New Zealand cheese must be very different from that which has hitherto been shipped, in order to secure a footing in the market. Late receipts of Tasmanian apples sold from $1.75 up to $3.75 per case, with a special lot selling at almost $5. A trial shipment of plums, grapes, pears and tomatoes proved an entire failure.

The produce of Ireland per acre exceeds that of Great Britain in wheat, barley, oats and beans, while Great Britain takes the lead in peas, potatoes, turnips and mangolds. The average yield per acre of England, Wales, Scotland and Ireland is given for wheat, barley, oats, beans and peas in bushels, and for potatoes, turnips and mangolds in tons, in the following table:

	England	*Wales.*	*Scotland*	*Ireland*
Wheat.....	26.20	23.86	34.66	29.36
Barley	34.81	29.26	35.84	36.76
Oats.	41.50	34.18	35.10	42.31
Beans.....	21.70	28.34	31.23	37.51
Peas.....	25.91	19.73	22.66	24.97
Potatoes.....	5.96	5.66	5.44	3.49
Turnips.....	13.76	16.04	14.88	13.55
Mangolds ...	18.52	17.97	14.77	14.49

The total quantity of wine barreled in the various French viticultural districts during the autumn of 1892 is estimated at 640,094,820 gallons. The crop of 1891 amounted to 663,058,000 gallons, being 22,963,180 gallons in excess of the present harvest. Everything taken into consideration, the 1892 crop is by no means a short one, for that of 1891 was the largest known since 1884. In 1892 there were 4,404,010 acres of ground given over to the cultivation of the grape, and the average yield per acre is accordingly fixed at 145 gallons. In 1891, only 4,354,610 acres of land were planted with vines, although the average yield was 152 gallons of wine to the acre.

While the upper provinces and territories of the Argentine Republic are an almost unbroken forest of primeval proportions, in which are to be found hundreds of kinds of hard woods susceptible of the very finest polish and presenting the most exquisite colorings, yet the country is almost devoid of the soft woods of commerce. There are pines both in Misiones and along the Cordilleras of Patagonia, but they are quite inaccessible to market; and there are also immense cedar forests, which are just now beginning to be exploited. At present, however, the only woods which reach Buenos Ayres, or are shipped abroad are the hard woods of the Gran Chaco. Owing to their specific gravity it is impossible to float the logs down the Paraña River; but they are brought down in *chatas*, or flat-bottomed boats, or are loaded from the banks directly in sailing vessels bound to European ports. There is a growing demand for them both in German and French manufacturing centers, where they are used for cabinet work or are sawed into ornamental veneering.

The final report on the yields of crops throughout Great Britain, as prepared by the Board of Agriculture, gives the following results:

Crops.	*Total Produce.*		*Y'ld per Ac*	
	1892	1891	1892	1891
	Bushels.	Bushels.	Bush	Bush
Wheat.....	60,775,245	74,742,700	26.48	31.30
Barley.....	76,939,135	79,555,089	34.78	34.72
Oats.....	168,181,197	166,472,428	39.82	40.46
Beans.....	7,054,275	10,694,376	22.38	29.83
Peas.....	5,028,494	5,777,445	25.85	28.23
	Tons.	Tons.	Tons.	Tons.
Potatoes.....	5,633,954	6,090,047	4.45	4.74
Turnips.....	31,419,153	29,741,587	14.04	13.40
Mangold.....	7,427,771	7,558,216	17.99	18.60
	Cwts.	Cwts.	Cwts	Cwts
Hay from c'over, sainfoin, etc...	80,305,423	85,566,162	29.10	31.39
Hay fr'm permanent pasture..	150,024,198	167,862,776	23.30	28.13
Hops.....	413,259	436,716	7.35	7.78

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Rush of blood to the head and other disagreeable symptoms afflicted Mrs. Annie W. Jordan, of 218 Tremont Street, Boston. A collision with a double runner brought on neuralgia of the liver, causing great suffering. She began to take Hood's Sarsaparilla and soon fully recovered and now enjoys **perfect health.** She says she could praise **HOOD'S SARSAPARILLA** all day and then not say half enough.

Mrs. Jordan.

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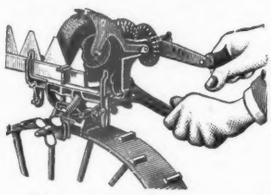

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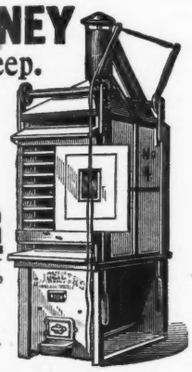

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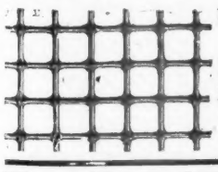

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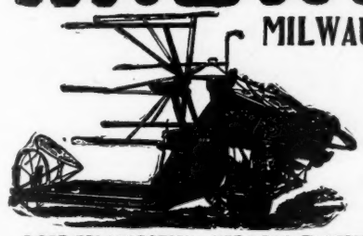

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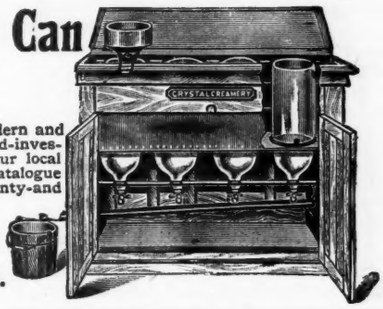

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ANIMAL AILMENTS.

Leaky Teat.—C. E. Coffin, Pontotoc Co., Miss., writes us that the calf bit one of the teats of a fine Jersey cow. The wound healed, but the milk-duct was penetrated, and the teat has leaked ever since. Can it be closed or remedied? Prevention is the best part of treatment. A siphon, or smooth wooden plug, should have been inserted at the time, and a bandage nicely applied around the teat, should have secured the healing from the bottom of the wound. This would have prevented the fistula. The cow has a milk-fistula. Apply a siphon, and with the narrow, sharp blade of a knife scarify the opening to the siphon, and then leave the siphon so that the milk will run out. The teat must be closed by a bit of muslin smeared with varnish, and a varnished bandage must be smoothly applied nearly the whole length of the teat. The raw edges of the opening or fistula, when properly compressed, will cause healing and closure of the opening. Do not remove the siphon for two or three days, and leave the bandage for two or three days longer. If you are a good surgeon, even, you may fail the first time. Try it again with great care and cleanliness. It is a good plan to strap up the fore leg, or tie or strap the hind legs together to prevent accident. But the most humane part of good surgery has not been stated. Spray the side of the teat where the opening is, with ether till sensation is temporarily suspended. If, at any stage, sensation is renewed, repeat the spraying.

Scouring in Horse.—Joseph Simons, Hand Co., Dak., has a valuable young stallion that he purchased for the purpose of improving his own and the horse stock of the neighborhood. He is an English Suffolk Punch, of good size and style. Being a pet, he has been fed too freely. He has spells of scouring, which get better by decreasing the feed. Put the horse in a box stall, and keep it clean and dry. Feed clean, well dusted hay and ground oats, twice a day in moderate quantity, in which a handful of ground ginger and gentian is mixed, night and morning. At noon, give a small feed of dry bran, in which a handful of flaxseed is thrown. Put in the water a teaspoonful of lime. If this management does not check the scouring, give a tablespoonful of tincture of catechu, and a tablespoonful of tincture of opium in a pint of well boiled flour gruel and add a tablespoonful of powdered charcoal to the midday meal. The horse should be driven or worked moderately for at least three or four hours. All stallions kept for breeding purposes should have plenty of exercise. A trotter should be reasonably put to his paces; a draught horse to fairly heavy work; a racer should be cantered, and a saddle stallion should be ridden ten miles. Four hours' work for a serving stallion is none too much, if properly managed. Nearly all our stallions perform too little muscular work to beget vigorous stock.

Cow That Sucks Herself.—A. G. Gushurst, Jackson Co., Mo., has a cow that sucks herself. A leather nose piece, worn as a halter will answer, if half a dozen round nails are driven through so as to project outwards, and with a leather back to keep the nails from coming out, tacked and clinched through and through. A cradle may be made with half a dozen green sticks a foot long and larger than the thumb, through each end of which holes are bored. Through these holes cord is strung, and so tied that each stick shall be held a few inches apart. This will prevent the cow from being able to reach the udder.

Glanders.—A subscriber wishes to learn the symptoms of glanders, as he is apprehensive that a recently purchased horse may have it. Keep the horse where he is, but remove all other animals from him. Be careful that no human being handles the horse or anything that has been used about him, as it is an incurable, malignant, contagious disease, fatal to man and animals. The disease specially affects the air passages and lymphatic glandular system. Farcy is the same disease having a different manifestation. The horse is off his feed, is dull, shivering and cold; his coat is rough and the general appearance is unthrifty. The slightest exercise excites profuse perspiration, showing great general debility. There is an offensive looking discharge from the nostrils, sometimes tinged with blood. Bleeding from the nose is common. The mucous membranes are pale, and on that of the nose are seen deep ulcers, looking as if cut out with a punch. Between these ulcers yellowish pimples stud the spaces, and among these will be noticed the commencing process of ulceration. When only one nostril is affected the eye on that side looks smaller than the other, and also is weak. The glands about the jaw are enlarged and feel lumpy. Even the inside of the nose looks blue or coppery. When any two of these signs are seen, send for a competent veterinarian.

Indigestion or Staggers.—Christian Sillig, Castle Co., Del., has a brood mare with good appetite, in high spirits, but, in consequence of being cross to other animals, she is kept in the stable. When not regularly used, she loses her appetite and spirits, and sometimes, when first taken out of the stable, she jerks up her head, partly closes her eyes and acts as if she was afraid of being struck on the head, and staggers a little, draws a deep breath, and seems better after working a couple of hours. This is a case of stomach staggers, or indigestion. Diet and work is all the treatment required. Mares in foal, if too liberally fed and not worked at least four hours a day are apt to become sluggish, if confined to a stall. Brood mares should never be tied up in a narrow stall, but do much better in a large, roomy box-stall. Give less hay, only at night, feed roots once a day, oats and bran night and morning. Add to the night feed a tablespoonful of Glauber salts and a tablespoonful of powdered gentian. Keep a lump of rock salt always within reach of the mare.

Retained Placenta.—Edward Erikson, Suffolk Co., N. Y., has two Jersey cows, good milkers, that are slow in the removal of the afterbirths. So long as there is no fever nor an offensive discharge, and if a warm bran slop has been given night and morning, and the appetite is good, no apprehension need be felt about the matter for five or six days. But should there be pain, straining, fever, or an offensive discharge, the sooner the placental membranes are removed the better. To a cupful of linseed oil, add half a teaspoonful of carbolic acid, glycerine—a dram of acid to an ounce of glycerine—into which dip the right hand and anoint the whole arm to near the shoulder, then drawing the extended fingers together in the shape of a cone, follow the membranes as far as possible. Gather them in the hand by a twist, and slowly, gently, but firmly, make traction and tortion. As advancement is made keep gathering the mass, so as to secure the placenta with the membranes. After their removal, cleanse by syringing the internal organs, by adding a quart of warm water to the oil, glycerine and carbolic acid.

Mange In a Yearling Colt.—David Walker, King Co., Wash., has a yearling colt that has the hair rubbed off over the back. It is doubtless mange. Wash the part with warm soap suds and soda, after brushing out all the scurf. Then apply a solution of half an ounce of carbolic acid to a pint of water. When dry at night, apply flowers of sulphur two ounces, ointment of carbolic acid six ounces, well rubbed together. This should be washed off with warm soft soap and water, with a flannel cloth, two or three times a week. The colt should be removed from the old horses and cattle, and should not be brushed with the same brush other animals are cleaned with. The colt should have good oats and hay. A bran mash with a handful of whole linseed twice a week, and carrots, mangels or potatoes once a day. Hens should not be allowed to roost near cattle, or horses. After the cause has been removed, the application of sweet oil will restore the hair.

Colt's Fetlock Cut With Rope.—John Stoughton, Lancaster Co., Penn., has a fine stallion colt that was hurriedly tied with too long a strap so that the rope caught under the hind foot. In kicking, to get loose, the skin was deeply cut. It is a hard running sore; and as the colt is afraid of being hurt, he kicks every time any one goes near him. Handle the colt with gentleness; give him a piece of apple, a lump of sugar, and convince him that you are his friend. Have another gentle handed person take him by the halter and raise one fore leg, then rub the hind leg from the hip down a number of times. Each time have the fore leg let down. Thus by degrees, cleanse the sore with warm castile soap and water, dry and apply with a soft linen cloth by gently sopping or dipping with a solution of sulphate of copper, a dram to a pint of water, in which the same quantity of carbolic acid is dissolved. Strain through fine muslin and keep in a stopped bottle labeled *Poison*, and kept out of reach of children. If there should come crusts or scabs, it is because the secretion has dried, and requires daily washing. Vaseline may be used to soften the parts, but cleansing will be necessary. Neglect will be sure to leave a blemish, and unkindness and roughness will be equally certain to leave a bad and dangerous habit of kicking.

Slow Growth of Hair.—Irving Fields, Westchester Co., N. Y., has a valuable driving mare upon which the hair, after shedding, does not grow on the neck or body till the middle of winter. There must be some defect of nutrition in the skin. Possibly there may be some defect of the digestive system. From the brief statement of the case, we can only advise that the stomach and bowels should be kept healthy, that the food should be nutritious and digestible, and that the skin should be smartly rubbed with a coarse woolen mitten, moistened with tincture of cantharides one part, glycerine five parts, and dilute (half water) alcohol ten parts. This should be applied after the morning grooming. Give of ground peas and whole linseed each a handful, in the evening feed. Warm blanketing in cool, wet weather will also be advisable.

Swelled Abdomen of Mare.—Isaac Searles, Cook Co., Tenn., has a brood mare that is not due to foal till the last of July. She has a swelling all along the back part of the belly, that leaves a hollow after the pressure is removed. The mare is kept in a stall. Turn your mare out to grass, and let her run all day, and night, too, if the weather is mild, as it is pretty sure to be at this season of the year. If the swelling does not disappear, give at night a tablespoonful of saltpeter, and one of Glauber's salts. Mares in her condition should not be dosed with aloes, or other powerful drugs. During violent storms, mares late in foal should be put up at night. Many colts have been lost by being born in a cold rain storm, and the excitement seems to cause a premature foaling.

Losing Hair of Tail and Mane.—M. R. Esdy, Bernalillo Co., New Mexico, wishes a remedy for a horse that is losing the hair from the mane and tail. Veterinarians call this alopecia. Probably all that can be done in this case, will be the daily thorough rubbing of the parts where the hair is being removed, wet with a solution of one ounce of borax to a pint of water. This case is about as promising as the restoration of baldness. The last time we saw old Hambletonian, the great trotting progenitor, he had not a hair in the foretop or mane. But he sired trotters, nevertheless. If, by any possibility, there may be lice at the bottom of the trouble, sponge with a dram of carbolic acid to half a pint of water before beginning the borax treatment.

Amaurosis—Palsy of Optic Nerve.—Theodore Shooter, Alchua Co., Fla., had a yearling colt castrated in the evening, and found the colt blind from hemorrhage next morning. He asks, "Could bleeding cause blindness?" Certainly; blindness occurs from severe driving, running, overloaded stomach, from pressure of the womb during gestation, from poverty of blood, and from bleeding. As to the probability of a cure, it is uncertain. It may be well to give small doses of nux vomica. As strychnia is the most soluble, and can be given in the drinking water, it will be well to have the druggist prepare you a solution that will contain one-quarter of a grain to a teaspoonful of fluid, so that, commencing with a quarter of a grain, or one teaspoonful of the solution, it may be given in the food or water twice a day. This is poison, and should be so marked, and kept under lock and key.

Cow's Tail Soft at the End.—Patrick Roche, Newport Co., R. I., wishes to know what to do for the softening of the end of a cow's tail. If there is matter in it, let it out with a sharp knife. If there is doubt about the presence of matter, paint a larger portion of the tail than the swelling occupies with tincture of iodine every day. If there is an abscess that does not heal, the end of the tail may be cut off, by a sharp chisel and block. But never resort to this expedient until necessary. If the cow's health is good, nothing serious will come of the trouble.

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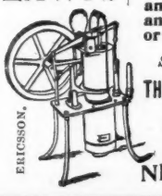

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THE CROPS OF THE WORLD.

The Condition of The Crops.

The Wheat Crop did not make as much improvement in condition during May as had been reported or was expected. Returns to the Department of Agriculture place the acreage of winter wheat at 87.8 as compared with that of last year, a reduction of 12.2 points. The States in which the principal decrease occurred were Illinois, Missouri, Kansas and California. In the three first-named States, the reduced acreage was caused mainly by the long-continued drouth of last fall and the extremely cold winter, and a considerable proportion of this acreage has been plowed up and sown to other crops. In Illinois this year's area of winter wheat is but 74 as compared with 98 a year ago; in Missouri it is 71 as against 87; and in Kansas 58 as compared with 98 last year. The condition of the winter wheat improved but slightly in May, being only 75.5 for an average of the whole country on June 1 as compared with 75.3 on May 1. In Ohio this year's condition was 90 as against 102 last year on the same date, a falling off of 12 points; in Michigan it is 72 as compared with 99, a decrease of 27 points; in Indiana it is 81 as against 99, a decrease of 18 points; in Illinois 67 as against 98, a falling off of 31 points; in Missouri 74 as against 87, a decrease of 13 points; and in Kansas 47 as compared with 98, a decrease of 51 points June 1, this year, as compared with June 1, 1892. In spring wheat there is also a falling off in area, which, this year, is 94 as compared with 100.3 a year ago, the percentages of the principal wheat States comparing as follows: Minnesota 90 as against 102 a year ago; Nebraska 100 as against 107; South Dakota 95 as against 118; North Dakota 96 as against 85; the total of these four States being 381 this year as against 412 a year ago. The condition of the spring wheat, while better than that of the winter crop, is but 86.4 as compared with 92.3 a year ago, a decrease of 5.9 points for this season. The condition of the principal spring wheat States compares as follows: Nebraska 65 as against 93 a year ago; Minnesota 88 as against 90; Iowa 95 as against 91; South Dakota 59 as against 95; North Dakota 92 in each year. The average per cent. of acreage for both spring and winter wheat for the whole country is 89.8 and its condition 78.8. The available stocks of wheat in the United States, Canada, Europe and afloat for Europe, on June 1 of this year, are given by Bradstreet's at 167,138,000 bushels, as compared with 120,171,000 bushels on June 1, 1892, an increase of almost 47,000,000 bushels, or 40 per cent. as compared with June 1, 1892, and of 77,000,000 bushels, or 80 per cent. increase, as compared with June 1, 1891. The stocks in Europe and afloat are given at 400,000 bushels less than last year, while in the United States there are over 47,000,000 bushels more than were held a year ago, the total visible supply in this country being placed at almost 90,000,000 bushels, the whole of which it is indicated will be carried over, July 1, into the new crop season.

The Area Sown to oats throughout the country, as compared with last year, is 100.7, and the condition, June 1, was 88.9, as against 88.5 on June 1, 1892. This is below the average June returns for a series of years. It will be remembered that there would have been a larger acreage planted last year but for the fact that the season was distinctly unfavorable in many portions of the Ohio valley, where the contemplated increase was prevented by excessive rainfall.

The Acreage of Rye this year, June 1, is given at 94.3 for the whole country, as compared with 99.2 a year ago, a falling off of almost five per cent in acreage. The average condition this year is only 84.6, as compared with 91 a year ago, and this season's condition is the lowest during a number of years.

The Barley Crop is sown this season on a smaller acreage than in 1892, the per cent. of area being but 94.9, as compared with 102.3 last year. The condition of this year's crop is also lower, being 88.3, as against 92.1 a year ago.

Bright Prospects in North Dakota.

The crops are all looking fine where they were properly sown, and the soil is in excellent condition. Some pieces of wheat seeded in old stubble are poor, which should remind the farmer that what is worth doing at all is worth doing well. On the whole, there is less acreage sown to wheat this season than last, but more barley, oats and millet. Grass is growing rapidly and there will be an excellent cut of hay again this year. Good showers and cool weather have strengthened wheat considerably, and had the effect to make it start well. Mixed farming is now a little more in vogue than formerly, but there is still plenty of room for more improvement in that direction. The farmers in Ransom county are getting into good financial shape, and many are purchasing additional land. Money seems to be more plentiful with farmers than with the merchants, and the cultivator of the rich soil of North Dakota has a bright future in prospect.

W. K. SMITH, Ransom Co., N. D.

The Acreage Planted to Cotton.

The returns of the correspondents of the statistical division of the Department of Agriculture, June 1st, show that over a large part of the cotton belt the germination and development of the plant have been retarded by cold weather and excessive rain, the latter also having the effect of retarding work and belating the crop. In some localities dry weather prevented successful planting, so that much of the seed failed to come up, and it is reported that the second planting was, to a considerable extent, a failure. Along the Mississippi and in low lands much injury was caused by overflows. In other localities early planting is assigned as a cause of the poor stands, while no inconsiderable injury from cutworms and lice is also reported. The prospect of a good crop in much of the cotton territory is, however, improving, in consequence of more favorable weather.

The average condition of the crop this year is given at 85.6 as compared with 85.9 a year ago, an improvement of but .3, and the different State averages compare as follows: Virginia 95 as against 79 last year; North Carolina 83 as against 88; South Carolina 88 as to 91; Georgia 87 both years; Florida 98 as against 89; Alabama 82 as against 91; Mississippi 86 as against 91; Louisiana 87 as against 82; Texas 82 as to 81; Arkansas 89 as to 75; and Tennessee 92 this year as compared with 90 a year ago.

The returns show only a slight instead of a large increase of the acreage planted as compared with last year. A considerable reduction of the area actually planted resulted from river overflows. The average per cent. of area is given at 100.5 as compared with 83.5 a year ago, an increase of 17 per cent. The State percentages of area in comparison with last year's acreage are as follows: Virginia 87 as compared with 73 a year ago; North Carolina 104 as against 76; South Carolina 104 as against 84; Georgia 102 as to 84; Florida 109 as to 81; Alabama 100 as to 84; Mississippi 98 as to 85; Louisiana 101 as to 80; Texas 102 as to 85; Arkansas 93 as to 82, and Tennessee 95 this year as compared with 83 on June 1, 1892.

The annual report of the *Commercial and Financial Chronicle* upon the cotton acreage has just been published and shows an increase of 7.29 per cent. in area, as compared with last year, although earnest efforts were made by representative men in various States, more particularly in Texas and Arkansas, to induce farmers to reduce the acreage, stress being laid upon the possible danger from an opposite course. The aggregate addition to the area this year, however, has not been so heavy as the decline recorded last year. Although the early spring weather was favorable, and planting as a rule a little ahead of last year, the crop is considered a late one, varying in degree of lateness, according to different sections, some districts being much better advanced than others. The season, on the whole, has been notable for low temperature, and the month of May for low excessive precipitation. Cultivation has been kept up very satisfactorily all through the season in the Atlantic States. In Alabama and Texas there have been periods when work was interrupted, but fields at the beginning of June were in fine condition. Grass and weeds had a good start in Louisiana, Mississippi, Arkansas and Tennessee, and a material increase is reported in the general use of commercial fertilizers throughout the whole cotton growing area. A comparison of the acreage by States, this and last year, showing the per cent. of increase, is given as follows:

States.	*Acreage.*		*Inc. per Ct.*
	1893	1892	
North Carolina	1,002,885	899,000	11½
South Carolina	2,023,840	1,807,000	12
Georgia	3,313,790	3,097,000	7
Florida	240,300	178,000	35
Alabama	2,775,580	2,594,000	7
Mississippi	2,806,650	2,673,000	5
Louisiana	1,112,826	1,091,000	2
Texas	4,142,880	3,836,000	8
Arkansas	1,415,220	1,374,000	3
Tennessee	683,550	651,000	5
Other States	183,870	162,000	13½
Total	19,701,385	18,362,000	7.29

The Southern Sugar Crop.

The Census bureau, in a preliminary statement compiled by Special Agent J. Hyde, gives the total production of cane sugar for the year ending May 31, 1890, at 135,147 tons of 2,240 pounds each, valued at $12,829,824 on the plantation, an average value of four and one-fifth cents per pound. The total production of merchantable cane molasses was 25,398,954 gallons, valued at $8,076,575, or nearly 32 cents per gallon to planters. As with rice, the sugar crop of 1889 was a short one, owing to drouth, the crop of the following season, 1890-91, amounting to 219,415 long tons, while the 1891-92 crop was only 163,350 tons. Almost the entire cane sugar crop is grown in Louisiana, the harvest gathered from Texas, Florida and Mississippi combined, amounting to only 4,432 tons, of which Texas produces 4,000 tons, Florida not quite 400

(*Continued on Page* 427.)

You have noticed that some houses always seem to need repainting; they look dingy, rusted, faded. Others always look bright, clean, fresh. The owner of the first "economizes" with "cheap" mixed paints, etc.; the second paints with

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"MORLEY" (Cleveland)
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NATIONAL LEAD CO.,
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THE CROPS OF THE WORLD.

(*Continued from Page* 426.)

tons, and Mississippi less than four tons. The Louisiana sugar season generally begins early in October, and there were 645 licensed producers of sugar cane who received a bounty during the fiscal year ending June 30, 1892. Florida and Texas each had 15 licensed producers. Only a small quantity of the cane sugar made tested less than 80 degrees, and more than 75 per cent. of it tested above 90 degrees. The production was short, owing to unfavorable weather, and the overflow of the Mississippi, which damaged some plantations. The total area of cane under cultivation in the United States is 253,000 acres, of which almost 40,000 acres are reserved for seed, the net area of production for market being 214,000 acres. The average yield of sugar per acre of cane grown during the season of 1891-92 was 298.6 pounds, while the yield per ton of cane was 115.9 pounds. In Louisiana very considerable improvements have been made in sugar houses during the past two years, new machinery of the latest and improved pattern has been put in, many factories have been remodeled, and in some cases almost entirely rebuilt. These improvements are attributed to the payment of the bounty, which has stimulated interest in the industry.

More Competitors for American Cotton.—In the AGRICULTURIST for May, Page 310, we referred to the increase of cotton culture in Egypt, and to its possible development in the Congo basin of Central Africa. It now appears that the crop is firmly established in British East Africa, where 200 acres have been grown for several seasons, yielding an average of 400 pounds per acre, or more than twice the average yield in the United States. The plant is not killed during the winter, and produces abundantly for three years in succession. The climate during the growing and picking season is characterized by intervals of moderate rainfall, and appears to be free from incidents injurious to the plant. Labor is cheap, abundant and efficient, and it is stated that at the currant rate of wages for field laborers, immigrants from India can be easily obtained. Samples from the Wattu crop were ranked by the Manchester (England) Chamber of Commerce as a substitute for the long staple Sea Island cotton. A cotton resembling Rough Peruvian has also been sent to England by the Governor of British Honduras, which was valued in Liverpool at nine cents per pound for spinning purposes, but if, as seemed likely, it should prove suitable for admixture with wool, it would be worth about 11½ cents. These are points that it will be well for American cotton growers to keep informed upon, as indicating other sources of supply that may seriously interfere with the foreign demand for American cotton in the not distant future.

The Benefits of the Beet Sugar Industry are felt by the State (or government), and by the people at large, as well as by the farmers. Without such an industry we doubt whether Germany and France would be the first-class powers in Europe that they now are. As a source of revenue and means of sustaining a large population, it stands unrivaled. Over $45,000,000 of revenue was raised from beets in France last year. In Germany the amount was much larger. Intense cultivation requires double the amount of labor, while it gives three times the products of labor. The land which formerly gave 14 to 16 bushels of wheat per acre in Germany now yields from 28 to 30 bushels per acre. Allowing ten bushels per acre for cost of growing, in the first case, the excess of five bushels, selling at 70 cents, gives a profit of $3.50 per acre, while the excess of profit in the latter case is $12.60. The increased benefit done the land through such tillage and the spent pulp fed back on the land is equally as beneficial, for we see that while we export dressed beef and live stock to Great Britain for food, we never send them to Germany or France. In fact, we suspect that if the industrial disease spread over our land was properly diagnosed, it would be found we are tilling too much land—wasting our forces by diffusion, when they might be concentrated upon those lines where we have natural advantages, and which require intense cultivation. O. K. LAPHAM, Staunton, Va.

Evaporated Fruits.

No industry on the farm pays as well as the use of an Evaporator, and great interest is now manifested in the subject by wide awake farmers.

Peaches, which would otherwise decay under the trees, if evaporated would bring a price per pound which places this class of fruit in the catalogue of the highest-priced fruit luxuries. Evaporated apples, at 10c per pound, wholesale, makes a bushel of windfalls worth 80c if evaporated. There is big money in it.

For simplicity in operation, economy in fuel, the fine quality of its product, and for the machine itself, we call particular attention to the American Fruit Evaporator, manufactured by the American Manufacturing Company, Waynesboro, Pennsylvania, cut of which herewith appears. It has a world-wide reputation for drying or evaporating fruits, berries, tea, coffee, cocoa, corn, cocoanut, etc. It is cheap and first-class in every way. The furnace burns wood or coal and regulates the heat itself automatically.

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TOPICS OF THE TIMES.

Prize Articles on Evaporating

Fruits and Vegetables—Fifty Dollars Offered for Statements of Experience.—A commendable practice which is yearly assuming larger proportions is the preservation of fruits, vegetables, etc., by drying. Great progress has been made in the methods and apparatus employed. But the average farmer, gardener and fruit grower is still quite ignorant of these new processes, and continue the old fashioned system. But millions of dollars worth of these perishable products are still wasted that might be marketed in dried form, and yield a fair profit where now there is no income at all. To this end, it is essential that the people should know just what is being done by modern evaporating and just how it is being done. What is needed, is the actual experience of those who make a practice of evaporating fruits and vegetables. The theories of those who have had no experience are apt to be misleading in such matters, while the information set forth by interested manufacturers of evaporating apparatus is not always reliable.

To draw out the practical experience of successful evaporators, which is the safest guide, the AMERICAN AGRICULTURIST offers $50 in prizes for the best articles on this subject. The papers to be submitted should describe the writers' beginning in the work of evaporation, the plans and outfit adopted at the start, and should then give the changes and methods that have led up to the writers' present success. The receipts and expenses should be given in detail, what crops were evaporated, when and where they were sold, and at what prices, and how they were prepared or packed for market. This phase of the subject is specially important, for what use is it to evaporate our surplus unless the product can be turned into cash. Photographs, sketches, etc., of the appliances and apparatus employed should accompany the manuscripts.

Farmers in Agricultural Offices.

A curious resolution was adopted by the Colorado State grange, at its recent annual session as follows:

"We recommend the enforcement of the law which requires that at least one-half of the members of the State Board of Agriculture shall be actual farmers."

It is a severe commentary on the administration of affairs when such a law is required, and still worse that its enforcement should have to be demanded.

A State Board of Agriculture should be a representative body of the most progressive farmers and agricultural scientists that the state contains, as it is usually charged with the general oversight of the state's work in promoting her agricultural interests.

We may infer from this Colorado law and vote that in that state the Board of Agriculture has come to be regarded as a political plaything, and that at least one-half of its members may be politicians or anything but farmers. Probably the farmers of the Centennial state are themselves to blame for the enactment of such a law, and probably are partly responsible also for the public sentiment which rendered it possible. The law also stands as a striking instance of the lack of respect shown to our foundation industry by the general public. If our farmers had not fallen into the habit of deprecating their own business, we never should have seen a law that practically says that for the State Board of Agriculture to do the best work, half its members should be something else than farmers.

We suggest that instead of calling for the enforcement of the present law, the Colorado grange insist upon striking out this qualifying clause and see to it that their State Board is composed of the men whose experience, education and observation render them best adapted to make the Board a distinct power for good.

Dehorning Cattle.—The Province of Ontario, Canada, appointed a commission to investigate the advisability of dehorning cattle. After much observation and correspondence in all parts of North America, the committee reports that it seems to be established beyond reasonable doubt that dehorning, by effecting a change in the disposition of the animal, greatly increases its market value, besides enabling the owner to handle his stock with greater ease, economy and safety. In the case of steers raised for the export trade, the owner is enabled to feed loose in large stables, and to adopt improved methods of saving manure, and, as the unruly disposition is thus largely subdued, less food is required to bring the animal to a prime condition. The stock can also be cared for by fewer men. On the English market the buyers give about $5 per head more for dehorned cattle, because they are not bruised by the horns of their companions, and because they put on flesh better. All the evidence, in fact, goes to show that the possession of horns by cattle, in addition to causing cruel and prolonged suffering, means a loss in the aggregate of hundreds of thousands of dollars to the farmers of this country.

Sugar Producers to Hold a National Convention at Chicago, August 16th.—A largely attended meeting of the Sugar and Rice-planters' Union was held at New Iberia, La., on June 7th. Arrangements were perfected for obtaining complete and accurate statistics of the sugar and rice crops of the country. The proposed United States Sugar Producers' Convention, suggested by the AMERICAN AGRICULTURIST, was discussed at length, and on motion of John T. White, of Lakeside Plantation, Banyou Teche, Jeanerette Post-Office, La., it was voted:

"*Resolved*, That the president of this Union, in conjunction with the president of the Louisiana Sugar Planters' Association, issue a call to the agricultural commissioners of each State wherein is produced sugar from cane, sorghum, maple, or beet, requesting them to appoint delegates to a United States Sugar Convention, to assemble in Chicago on August 16th next, then and there to take such action in regard to the sugar industry as in their judgment the circumstances demand. No person is to be appointed a delegate who is not actively engaged in the production of domestic sugar. The delegation from Louisiana shall consist of twenty-five *delegates*, the aforesaid president to be a *member* thereof."

The time is so short that the Commissioner or Secretary of Agriculture of each State should at once appoint delegates to this convention from the prominent producers of sugar crops in his State, be they cane, sorghum, beet, or maple. Nearly every State in the Union grows one or more of these sugar-producing plants. Every such State should be represented at the proposed convention, which may be fraught with immense good to the whole country, and to farmers in particular, if its counsels are governed by patriotic motives and a sincere desire to promote the best welfare of the agricultural interests of the country. What the sugar-producing interests need is less politics and more coöperation between sugar producers. They have only to unite in a proper manner to compel all political parties to heed their reasonable demands.

A New Experiment Station will soon be in active operation on the non-irrigated plains of Eastern Colorado, at Cheyenne Wells. This will be the first general experiment station in the semi-arid region. In such a location, the possibilities of the new station are unlimited. Its field of research will be extensive, and many of the results will doubtless be of very great value to the drouthy lands in Colorado and Kansas.

Classes of Wealth Producers.—In this age, the majority of single products are produced by great numbers of men, and one cannot say, in a literal sense, that any one man produces any one thing. According to W. M. Mallock, in the *North American Review*, the same number of men who, in the United States, in the year 1840, produced wealth to the value of $1,000,000,000 per year, are producing this present year wealth to the value of $2,300,000,000. In proportion to the number of producers, the product has been more than doubled, while if the inquiry is carried back to 1,800, the then product is now trebled. This increase in the productivity of the same number of producers must be due to some cause or causes which are in operation now, and which were not in operation then. These causes are scientific invention and discovery, and improved methods of dividing and applying labor. These improvements are not the work of chance, or of nature, but have been brought about by the deliberate and persistent action of a few men, and the millions said to be due to the improvements, are really due to these men by whom the improvements were introduced. These men, who are a very small minority, correspond, broadly speaking, with the wealthier classes, and out of every hundred million dollars produced in the United States to-day, these men produce at least $66,000,000. Instead of the riches of the few being taken from the products of the many, the present competence of the many is taken from the products of the few, who produce the whole of the wealth which they enjoy, and also every increase of wealth, which is, year by year, enjoyed by the many. Labor is the industrial exertion of a single man on some single piece of work only. Ability is the industrial exertion of a single man which affects simultaneously the labor of many men, multiplying and improving the results of it in each case. There is an inventive ability and an ability of enterprise. Capital is the economically saved creation of past ability. Interest is the sum paid by ability for the use of capital to the owners of capital. That labor plays a subordinate part in production in no way casts a slur on the general qualities of the laborer. Wealth is not the measure of a man, and many a laborer may be far superior as a man to the man on whose industrial ability he is absolutely dependent as a laborer. He should not long remain thus dependent, but by coöperation should gain ability to manage his share of the world's work, if necessary to social freedom. But an accurate study of the daily work of the world will show that the few, however inferior morally, produce the larger part of the wealth of the modern world; that wealth is not, as commonly said, the result of social labor only, but is the result of social labor multiplied by ability; and whatever claims the public may have on the wealth of the minority, that claim cannot be sustained on the ground that the public has produced this wealth; for the minority as a body have not only produced the whole of it, but a vast amount besides, which the public has already appropriated.

Hawaiian Workmen.—The large sugar plantations on the Hawaiian Islands require more workmen than the native population can furnish, as they employ 20,000 laborers, of whom 9,379 are Japanese and Chinese under contract. Altogether, there are 30,000 Asiatics living on the Islands. In addition, many Hawaiians, Portuguese, and others, are employed for various kinds of work, mostly as month, or as day laborers. Several plantations are worked on the share system. For one-fifth of the sugar made from the cane, a small planter leases a part of a plantation and agrees to plow, plant and cultivate and harvest the crop, paying for his tools and labor from advances made by the landlord, to be deducted from the one-fifth share of the crop. This is very similar to the plan on which the Southern negroes work the American cotton plantations.

Increase of Tile Drainage.—The agricultural value of comparatively level land is greatly enhanced in moist districts, and in irrigated regions, by a thorough system of underdrainage. Tile seems to best answer the purpose. For upwards of a half century in America, and for more than a century in Europe, actual use on farms has shown that tile drainage advances the progress of agriculture more than any other one improvement where the cost is considered. The United States now has more than 2,500 drain-tile factories in operation. Many of these tile factories have been enlarged to meet the increasing demand, until the turning out of more than a million tile annually is the usual output of a single factory. Some establishments make five million drain-tiles per year. The industry has, at least, 100,000 workmen making the tile, and about 150,000 men surveying, digging drains and laying the tile, which so control the soil moisture that a good crop is certain in either flood or drouth.

American Berkshire Association.—All records of registry or transfer of Berkshire swine later than March 1, 1893, will be affected by the new schedule of fees, which, after the first year, adds a penalty of $1 or $1.10 for each additional 12 months, or fraction thereof, which is allowed to elapse before the registration of the animal. For transfers, the penalty is 25 cents additional after the first six months. Only such animals as are recorded in the American Berkshire Record are eligible to compete for the $1,000 in cash prizes, offered by the Association for exhibits made at the World's Columbian Exposition, to be held in Chicago, in 1893.

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GARRET M. VANNESS.

been a reader of, and club-raiser for, the AMERICAN AGRICULTURIST from its first number, having secured over 2,000 subscribers. Of all of these, he has kept a careful record, which he guards and treasures highly. So fully convinced was he that any intelligent farmer who reads the AMERICAN AGRICULTURIST for an entire year will receive full equivalent for the subscription price that he never hesitated to advance the amount of the subscription for the members of his clubs. He is one of the most successful and honored farmers of Morris County, N. J., and whenever business calls him to New York City he never omits to make a visit to what he calls "The dear old AGRICULTURIST." At the ripe age of 82, he is more bright and vigorous than many a man 20 years younger. He attributes his success to regularity and temperance in all things, and to the invigorating influence of the outdoor life of the farmer.

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American Jersey Cattle Club.—Mr. J. J. Hemingway, Secretary of the Club, 8 West 17th St., New York City, informs us that Volume XL. of the Herd Register contains entries of 6,500 animals and is now ready for distribution, free to members on application, and $1 to non-members.

To Cane Growers.—The attention of our readers is called to the advertisement of the Blymer Iron works Co., of Cincinnati, Ohio, which appears in this issue. Their Victor and Niles Mills and Cook Evaporators for Sugar Cane and Sorghum, have for many years been looked upon as Standard Machinery, in all sections of the world where cane is grown.

New Headquarters for Scott's Emulsion.—Messrs. Scott and Bowne, makers of Scott's Emulsion and other specialties have removed from No. 132 S. Fifth Av. to the new and magnificent Scott and Bowne Building on New Chambers, Pearl and Rose Streets, New York City. The twelve story structure is one of the handsomest in America, and is a credit to this enterprising fern.

A New Departure.—Messrs. W. S. Powell & Co., one of the most enterprising firms manufacturing fertilizers in Baltimore, have taken a good departure in their line of trade by starting at Annapolis Junction, in Howard county, half way between

(*Continued on Page* 431.)

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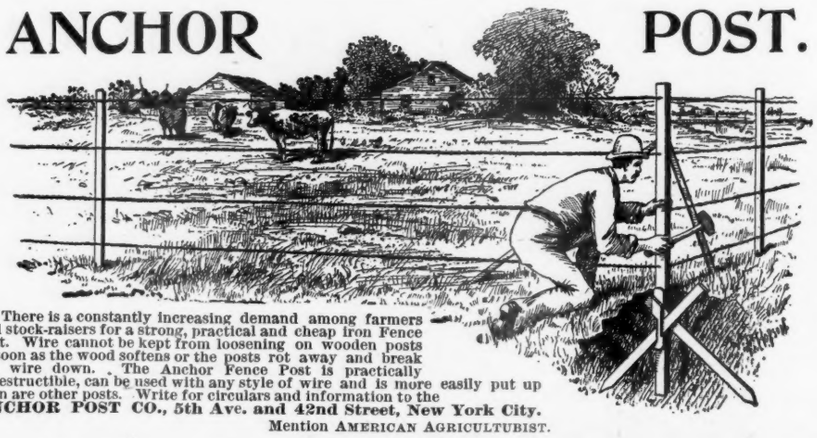

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MATTERS OF BUSINESS.

(*Continued from Page* 430.)

Baltimore and Washington, an experiment farm for trying practically in the field, on different soils and crops, the fertilizers they make, with a view of testing thoroughly their value as crop-producing agents under different conditions before offering them to their customers.

Famous Harvesting Machinery. — The Acme Harvester Company of Pekin, Illinois, will send free to any of our readers who mention this magazine, an elegantly illustrated catalogue of Harvesting, Haying and Stacking Machinery. They call particular attention to their Hodge's Header, the Acme Stacker, the Monarch and Acme Sweep Stacking Rakes, with automatic brake, and the Acme Stack Cover Chains, all of which are used by progressive farmers, and have the very latest improvements.

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Scientific Machinery.—The Foos Manufacturing Co. of Springfield, O., make the Scientific mill for grinding unhusked or unshelled corn, the result being a nutritious cob-meal. The mill will also grind corn fodder, corn meal and graham flour. The Company also manufacture corn planters, harvesters and shellers; corn meal bolters, forges and farmers' tools, horse powers and other farm machinery. They issue an artistic World's Fair Edition of their catalogue, which our readers can procure by mentioning this magazine.

International Horse Association. — We are pleased to notice that a number of prominent horse breeders have arranged to meet on September 7th at the Assembly Hall near the Live Stock Pavilion of the World's Fair in Chicago for the purpose of organizing an International Morgan Horse Association, and to consider and act upon any other matters that may be of interest to Morgan Horsemen. Mr. Delos Dunton, Secretary, Carpentersville, Ill., will gladly give further information to any interested in Morgan Horse rearing.

The Advertiser's Handy Guide.—This useful book contains a list of the best publications in which to advertise, with frequency of issue, local or general, alphabetically arranged by States and towns, giving circulation and population. This ninth edition of this Handy Guide is still small enough to be placed in the coat pocket, or desk pigeon hole, is artistically bound in soft leather, and will prove of great value to all who advertise. Its increasing popularity is due to the established reputation of the Bates & Morse Advertising Agency, who add improvements with each successive edition.

A Run on Dip.—An unprecedented demand has set in all over the country for the celebrated Cooper Sheep Dip, consequent upon the favorable verdict of Sheep men who have used it. It returns its cost many times over in the improved condition of the flock. Mr. W. R. Weaver, Canton, Ill., obtained three-fourths cent per pound more last year for Cooper dipped wool than for that not dipped—both lots shorn from same class of sheep. Mr. H. J. Fick, Nanvoo, Tioga Co., Penn., got 25 cents per head more for his lambs than ever before, and says he owes it to Cooper Dip. Write to William Cooper & Nephews, Galveston, Texas, for plans of cheap dipping tub.

Largest Plow Factory in the World. — At Moline, Illinois, in 1838, John Deere fashioned two plows by hand, cutting the moldboards from an old mill saw, and bending them over a log. The next year ten plows were made, and the business has grown until to-day Deere & Company operate the largest plow factory in the world. One thousand workmen now make one hundred fifty thousand implements yearly, using 40 tons of emery, 250 tons of oil and varnish, 1,500 grindstones, 2,500 tons of steel, 6,000 tons of iron, 7,500 tons of coal and coke, 2,000,000 feet of oak and ash lumber, and other material in proportion. No. 25 of their illustrated catalogue is a magnificent volume, and has just been issued for the season of 1893-94.

Hay Prospects in England.—The latest cables from Thomas Irvine & Co., of Liverpool, state that the hay crop in England is attracting the serious attention of all concerned therein for the country has never been so bare of old hay nor the consuming centers subjected to so tight a pinch before. To the unprecedented drouth and the lateness of the rains is to be attributed the practical failure of the first crop which may virtually be put down as nothing. Prices for good hay have already advanced to $25 per ton of 2240 pounds, and higher prices are looked for, as too much cannot be expected from the second crop, although possibly it may be earlier than usual.

A Valuable New Hand-Mill.—On small farms, grain hand-mills meet a want of the farmer, by enabling the grinding of grains for home use. Until recently, only primitive hand-mills, giving poor products, and with considerable loss of power, have been upon the market. By far one of the best mills (a mill so substantial that the farmer may grind his own wheat and make his own flour and bread, of the best quality, without further expense, is Schweitzer's Hand and Power Mills. These new agricultural mills perform with the same perfection as the country mill the chopping and grinding of all sorts of grains, as wheat, rye, etc., and the decortication of buckwheat, beans and rice. The mills in active operation may be seen in Machinery hall at the World's fair.

Massachusetts Horticultural Society. — The Rhododendron Show of the Massachusetts Horticultural Society was held in the Hall of the Society in Boston, Tuesday and Wednesday, June 6th and 7th, opening at 12 noon on Tuesday, and closing at 9 P. M. Wednesday. The Rose and Strawberry Exhibition will be made on Tuesday and Wednesday, June 20th and 21st, opening at 12, noon, on Wednesday and closing at 9 P. M. Thursday. A prize exhibition of plants, flowers and vegetables was held on May 6th, and one of Tree Pæonies on Saturday, May 27th. New or choice specimens of plants, flowers, fruits and vegetables are displayed in the Hall every Saturday.

Evaporating Fruits and Vegetables.—It would be difficult to estimate the amount of fruits and vegetables which go to waste every year for want of proper contrivances to preserve them by evaporation. A cheap, simple, and yet perfect evaporator should find a place in every home where fruits and vegetables are grown. Such a machine is the Granger Fruit and Vegetable Evaporator, manufactured by the Eastern Mfg. Co., 257 South Fifth St., Philadelphia, Pa. Its construction and management are so simple that it requires scarcely any labor or attention to operate it. In using it, it is connected with an ordinary kitchen stove and does not require any extra heating apparatus.

(*Continued on Page* 432.)

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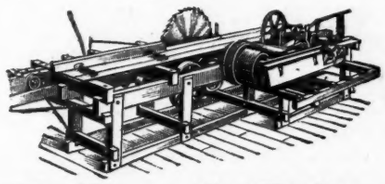

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MATTERS OF BUSINESS.

(*Continued from Page* 431.)

It is stated that it has always taken the first premium wherever shown at agricultural fairs, and that it is rapidly being introduced into all parts of the country. The descriptive catalogue issued by the company gives a full account of the machine and how to operate it. The company will mail it free to all readers of the AMERICAN AGRICULTURIST who apply for it.

The Buckeye Incubator at the World's Fair.—The Buckeye Incubator Co., of Springfield, O., has spared neither pains nor expense, in making a most interesting exhibit at the World's Fair. The exhibit consists of the different machines in operation, manufactured by this Company and will be a practical illustration of their excellence. With the commendable generosity and consideration for the comfort and convenience of their friends they invite the readers of the AMERICAN AGRICULTURIST to make their exhibit the headquarters, where they will find every facility for attending to their correspondence or gathering information on the subject of Poultry. It will prove instructive and beneficial to the farmer and Poultry man, and highly interesting to all.

Letter From an Indian Boy.—One of the pupils of the Indian School at Perris, Cal., writes us: "I am one of the pupils of the Perris Indian Industrial Training School where a hundred boys and girls are trying to learn to be good and useful men and women. We have nice buildings and kind teachers who do all they can to help us. Many of us like to read the papers, but we do not get as many as are needed for so many, and Mr. Savage has told us we might write to a few of the leading publishers with whom he is acquainted and ask them to tell their readers that we shall be glad to receive second hand pictorial papers, magazines and juvenile publications for the reading rooms of this school. Very Sincerely Yours, Antonio Lufo. Approved; M. H. Savage, Superintendent."

Potatoes and Their Way Out.—Farm machinery is fast making hand labor needless and profitless. The farmer no longer swings the cradle or binds the sheaves—machinery does it for him. What the great harvesting machines have become to the wheat raiser, the Hoover Potato Digger is to the potato grower. The Hoover will operate in soil in all conditions as to texture, moisture and rockiness, or weediness, in potatoes with green tops or dead; will drop the weeds and tops at one side and leave the potatoes all in a row on top the ground with the dirt shaken off. It is built with an eye to strength as well as efficiency—will stand the roughest usage. The Hoover, like every especially good agricultural machine, is covered by a strong guarantee as to its durability, etc. Its makers, Messrs. Hoover and Prout, Avery, Ohio, will gladly send their readable descriptive matter to any readers of the AMERICAN AGRICULTURIST applying for it.

Packing Fruits for the World's Fair.—All fruit intended for the World's Columbian Exposition should be gathered while firm and hard, but fully ripe, according to L. A. Goodman, Westport, Secretary of the Missouri State Horticultural Society. The fruit should be perfect in form, size, color and shape, but should not be soft. Strawberries and blackberries should have a half inch of stem. Raspberries should have the receptacle and a half inch of stem also. Cherries, plums, apricots, peaches, quinces, apples, pears, currants and gooseberries need perfect stems on every specimen on bunch. Grapes will carry better with a small piece of the vine. All the fruits should be wrapped in one or two thicknesses of tissue paper, and then in oil paper or manilla paper. Thus wrapped, they will carry without bruising or injuring each other in case of decay. Pack them carefully in small packages. All berries, plums, cherries, currants and grapes should be packed in berry boxes and crates. They need to be well packed and spaces filled with paper, so that they will not move in transit. All apples, pears, peaches, quinces and some plums and grapes should be packed in third bushel boxes, and the spaces likewise well filled. In October, there will be a grand fruit display of the fruits that can be gathered together. So every fruit grower should send liberally to his State exhibit.

American Southdown Breeders' Association.—At the recent meeting at Springfield, Illinois, the Association expressed itself as being thankful for the good work that the Southdown Breeders' Association of England is doing, and that as a recognition therefor, the rules of entry now in force will be continued. In regard to judging and awards at the Columbian Exposition, it was resolved, that while preferring the single judge, the American Southdown Breeders' Association recommends that under no circumstances shall there be more than three judges appointed for any one ring. Resolved that it is the sense of this Association that awards shall be made, and the result thereof announced, while the animals are in the ring. On account of the very liberal offer of Special Premiums by this Association, Secretary J. G. Springer reports that the indications are that the exhibition of Southdowns will be large, and of a quality that will prove their superiority in comparison with other breeds at the World's Columbian Exposition. It having been determined to hold a meeting of the Association in Chicago during the World's Columbian Exposition, the election of officers and other matters not requiring immediate attention were postponed until that meeting. At this meeting to be held in Chicago on September 27th, interesting and valuable papers in the interest of sheep will be presented, and every endeavor will be made to make it a most profitable one for this interest. Sheep breeders of England as well as America will be welcomed to meet with the Association at that time.

Loved It From Babyhood.—Of the 20 different periodicals which come to our house none is more eagerly welcomed than the dear old AMERICAN AGRICULTURIST. From my babyhood, I have loved it. My grandfather, as well as my father, swear by it, and my mother and brother are no less enthusiastic. The good things I have learned from its pages cannot be numbered.

JULIA KING, Liberty Co., Ga.

An Honored and Welcome Guest.—Long live the dear old AMERICAN AGRICULTURIST. It is an honored and welcome guest in every household in our great country. Whenever its teachings are supplanted by any other, America will cease to be American. F. SIMMONS, Conecuh Co., Ala.

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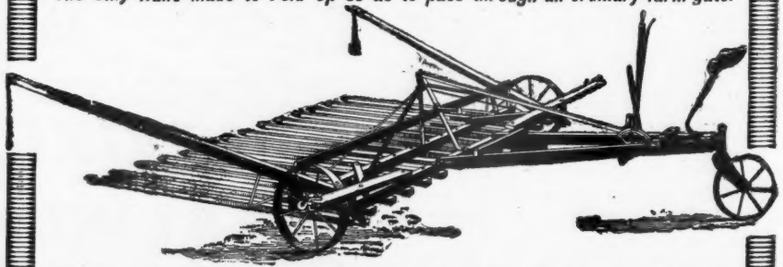

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Book Reviews.

FARM LIVE STOCK of Great Britain. By Robert Wallace, Professor of Agriculture and Rural Economy in the University of Edinburgh. Author of "Indian Agriculture." Third Edition, Revised and Enlarged. London: Crosby Lockwood & Son. 1893. 350 pp., il., 8 vo., cloth.

The new third edition of this useful work has been practically re-written, and the information contained in the earlier issues has been greatly increased and extended. Besides a chapter on the shepherd dog, several useful articles have been introduced, one of them containing illustrations and descriptions of the consecutive phases of the motions of a horse. The characteristic features of the previous editions have been maintained and emphasized, especially in brevity of expression and copious pictorial illustration. The excellent half-tone engravings were executed in Vienna, and are made from over 100 original photographs of typical animals of the various breeds. The usefulness of these life-like pictures is enhanced by the fact that the reader's eye has been for years educated to look at drawings of animals which have been idealized by the pencil of the artist until they are quite unreal and unnatural. There are short sketches of the histories of the various breeds, which are full enough to encourage special research into the exhaustive records referred to in the footnotes. This work is of great value, not only to the general farmer, but also to students of Agriculture, who will find special instruction in the photograph engravings of picked specimens of live animals chosen as typical representatives of the different breeds to which they belong. Sold by Orange Judd Company. Price, postpaid, $5.

THE COMPLETE GRAZIER and Farmers' and Cattle-Breeders' Assistant. A compendium of husbandry, embracing the breeding, management and diseases of stock; dairy farming and dairy produce; poultry and poultry farming; farm offices, implements and machines; cultivation and management of crops and grass land; drainage, irrigation and warping; manures, their application and value, and other subjects. Originally written by William Youatt. Thirteenth edition, re-written, considerably enlarged, and brought up to the present requirements of agricultural practice by William Fream, LL. D. Steven Lecturer in the University of Edinburgh. With upwards of 450 illustrations. London: Crosby Lockwood & Son. 1893. New York: Macmillan & Co. 1086 pp., il., 8 vo., half Russia.

Throughout this work, no effort has been spared to make the text a faithful mirror of progress and a reliable record of modern British Agriculture. In this modernized and enlarged edition of a treatise which made its original appearance nearly a century ago, it has been deemed expedient to retain those features of Youatt's work which have so long and so steadily commended themselves to the general approval. Entirely new chapters have been added on the Secretion of Milk, on the Anatomy of the Horse, on Silage, and on the Natural Grasses. With very few exceptions, the illustrations of live stock are new to the work. As no one man could hope to deal successfully with the many new subjects brought under discussion, the new chapters have been written by specialists and experts, but every part of the work has received the master-touch of Dr. Fream. Sold by Orange Judd Company. Price, postpaid, $12.

HORSES, CATTLE, SHEEP AND SWINE. By George W. Curtis, M. S. A., Director Texas Agricultural Experiment Station, and Professor of Agriculture in the Agricultural and Mechanical College of Texas. Second Edition, Revised and Enlarged. New York: The Rural Publishing Co., 1893. 343 pp., il., 8 vo., cloth.

This second edition has been carefully prepared by the author, the text thoroughly revised, brought down to date, numerous additions made, and many valuable suggestions from competent stock men and instructors in animal husbandry have been followed. In the chapter on the selection of the horse for speed there is a careful scientific consideration of the mechanical construction of the modern trotting horse. The draught horse receives full treatment. The author has given fully the origin, history, improvement, description and merits of every breed of live stock with data regarding its registry association, scale of points, if any, and other matters of value to all who are interested in improved stock. Letters from well known and successful American breeders give the methods of handling, breeding and feeding, followed as a daily routine. Sold by Orange Judd Company. Price, postpaid, $2.

CHECK-LIST OF THE PLANTS Contained in the Sixth Edition of Gray's Manual of the Botany of the Northern United States. Including the District East of the One Hundredth Meridian and North of North Carolina, Tennessee and Arkansas. Compiled by John A. Allen. Published by the Herbarium of Harvard University, Cambridge, Mass., 1893. 130 pp., 16 mo. Price, ten cents in paper, 25 cents in leatherette.

This little book has been prepared in response to various calls for a check-list corresponding to the revised form and extended range of Gray's Manual. By giving collectors a convenient means of indicating their desiderata and duplicates, it is hoped that the list will facilitate herbarium exchanges. Its pocket size adapts it to both field use and mailing. An attempt has been made to enumerate the additional plants found within the limits of the Manual since the issue of the sixth edition. In justice to other publications of this nature it is stated that the issue of this check list and its low price have been rendered possible by the liberality of an anonymous friend of the Manual.

HOW TO GROW CUT FLOWERS. A Practical Treatise on the Cultivation of the Rose, Carnation, Crysanthemum, Violet, and other Winter Flowering Plants. Also Greenhouse Construction. Illustrated. A Book for the Florist and Amateur. By M. A. Hunt. Published by the Author. 1893, 228 pp., il., 12 mo., cloth.

The cut flower industry represents millions of dollars in capital, and gives employment to many thousands of people. This book gives information concerning this great and constantly increasing business. The author has inserted the result of fifteen years' experience as a florist. It is a plain story, the combined result of experience and observation. The author acknowledges the indebtedness of horticulturists to the professors in the agricultural experiment stations for much light already shed upon the diseases incident to plant life. Sold by Orange Judd Company. Price, postpaid, $2.

HORTICULTURE. Ten Lectures Delivered for the Surrey County Council. By J. Wright, F. R. H. S., with 37 Illustrations. London and New York: MacMillan & Co. 1893.

Among the subjects taught in the country and suburban districts of England, practical gardening, on a sound basis, is given a prominent place. These lectures were delivered in furtherance of that object, and the course is published to enable a larger number of workers on the land to obtain knowledge that will lead to a greater supply of useful produce from their garden plots, and render the surroundings of their homes more interesting and attractive. Sold by Orange Judd Company. Price, postpaid, 35 cents.

THE POULTRY YARD: HOW TO FURNISH AND MANAGE IT. A Treatise for the Amateur Poultry Breeder and Farmer on the Management of Poultry and the Merits of the Different Breeds. By W. Atlee Burpee. Philadelphia: W. A. Burpee & Co. 1891. 41 pp., il., 8vo., cloth.

This volume aims to compile, from all reliable sources, a concise treatise on poultry, giving instructions to beginners. This second edition has more illustrations and fuller descriptions of many breeds, because such information is much sought by farmers and fanciers, whose attention is constantly being awakened to the economy of using only the best improved fowls. Sold by Orange Judd Company. Price, postpaid, $1.

CANADA THISTLE. Seeding, Propagating, Eradicating. The Columbian method of Exterminating. Nature's Resources Scientifically Handicapped. By H. B. Richards, Avona Farm, Easton, Penn. 1893. 21 pp., 16 mo., paper. Sold by the Author. Price $1.

This monograph gives the various methods of killing that most troublesome weed, Canada thistle, *Cricus arvensis*. The author's Columbian Method of Exterminating this pest is the burden of the book, and strong claims are made for its efficiency. Methods of eradicating ox-eye daisy, golden rod, plantain, and other noxious weeds are described.

SHEEP FARMING. A Treatise on Sheep, Their Management and Diseases. By W. Lutherland, Beel Farm. Tibbermuir, N. B. Berkhamsted: Wm. Cooper and Nephews. 1892. 163 pp., il., 12 mo,, flexible cloth.

This British book treats of the various European breeds of sheep, and the methods of rearing them for both mutton and wool. Soil, feed, shelter, care, all are fully described. The best methods of dipping sheep are explained, including the use of the publisher's famous compound. Sold by Orange Judd Company. Price, postpaid, 25 cents.

TRAVELERS' DIRECTORY OF WOMEN'S CHRISTIAN ASSOCIATIONS. Published and sold by the Women's Christian Association of Philadelphia, Penn., 1,318 Arch Street. Pocket or Cardcase Folder. Three cents each, twenty cents per dozen, $1 per 100. Postage paid by publishers.

This neat leaflet is published for the benefit of women traveling alone, to whom a knowledge of the addresses of the Women's Christian Associations will be useful. This is the first directory of its kind and is issued simply from a philanthropic desire to assist women, many of whom will be glad to obtain the information it contains.

KNOTS, SPLICES, HITCHES, BENDS AND LASHINGS. Illustrated and described by F. R. Brainard. Ensign, U. S. Navy. New York: Practical Publishing Co. 1893. 76 pp., il., 32 mo., cloth.

Whoever wishes to tie a cord, or splice a rope in the best way will find the needed method described and illustrated in this handy volume. The highest authorities have been followed, and the drawings are executed with correctness and clearness. Sold by Orange Judd Company. Price, postpaid, $1.

Recent Publications.

MISCELLANEOUS WORKS.

RUSSIAN AGRICULTURE. Report of Crops for 1892, with especial reference to the famine districts. Maps of yield of Rye and Other Grains by Provinces. St. Petersburg: Imperial Department of Agriculture. 136 pp., 8 vo., paper.

ILLINOIS AGRICULTURE. Statistical Report. Circular 160. W. C. Garrard, Secretary, Springfield, Ill. Pamphlet.

CLIMATOLOGY OF THE COTTON PLANT. By P. H. Mell, Ph. D. Weather Bureau Bulletin No. 8. Department of Agriculture, Washington, D. C. 68 pp., maps, 8 vo., paper.

OUT DOORS. A Book of Healthful Pleasures and Open Air Games. Boston: Pope M'f'g Co., 1893. 80 pp., il., 12 mo., chromo-lithographed cover. Ten cents.

KANSAS AGRICULTURE. Quarterly Report of the State Board. M. Mohler, Sec'y, Topeka, Kan. 158 pp., 8 vo., paper.

SHOPPELL'S MODERN HOUSES. An Illustrated Architectural Quarterly. No. 38. New York: C.-O. B. P. A. Fifty cents.

THE IRRIGATION AGE. Published Monthly by the Irrigation Age Co., Salt Lake, Denver, and San Francisco. Illustrated. Wm. E. Smythe, Editor. $2 per year.

CONFLICT OF THE NINETEENTH CENTURY. The Bible and Free Thought. Biblical Religion the Exact Counterpart demanded by the Nature of Man. By Rev. Thomas Mitchell. New York: The Universal Book Co. 1893. 456 pp., 12 mo., cloth. $2.

THE SANITARIAN. A Journal of Preventive Medicine and Hygiene. A. N. Bell, M. D., Editor, Brooklyn, N. Y. Monthly. $4 per year.

NAPOLEON. A DRAMA. By Richmond Sheffield Dement. Reading Edition with Appendix. Chicago: Knight, Leonard & Co. 1893. 183 pp., il., 12 mo., cloth.

OUR BROTHER IN YELLOW. By Rev. Louis Albert Banks, D. D. Boston: Lee & Shepard. 1893. 29 pp., 32 mo., flexible linen. Fifteen cents.

TALES FROM TOWN TOPICS. Issued Quarterly. New York: Town Topics Publishing Co. 255 pp., 12 mo., paper. $2 per year.

A STANDARD DICTIONARY OF THE ENGLISH LANGUAGE. Prospectus and Sample Pages. To Contain 2,200 pages, over 4,000 illustrations and 280,000 words. New York: Funk & Wagnalls Co. 1893.

AGRICULTURAL EXPERIMENT STATION BULLETINS.

CALIFORNIA—At Berkeley. California prunes, apricots, plums and nectarines (B. 101).

COLORADO—At Fort Collins. Irrigation. Duty of water (B. 22).

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FLORIDA—At Lake City. Grasses, forage plants, Southern tomato blight (B. 18). Tobacco (B. 19).

GEORGIA—At Experiment. Fertilizers (B. 23).

IDAHO—At Moscow. Alpali and soil analysis (B. 3).

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NEW YORK—At Geneva. Cheese making throughout the year (B. 50). Celery diseases (B. 51). Fertilizers (B. 52). Capons (B. 53). At Ithaca. Spraying

(B. 48). Fungi (B. 49). Bud moth (B. 50). Apricot plum, Wineberry, Crandall currant, Dwarf Juneberry (B. 51).

MAINE—At Orono. Experiment with fuels and foods (R. '92.) Cream and milk tests (B. 4). Tomatoes and egg plants (R. '92 iii).

MARYLAND — At College Park. Strawberries, seed potatoes (B. 17). Sweet potatoes (B. 18).

MASSACHUSETTS—At Amherst. Fruits (S. B. 21). Food stuffs (H. B. 45). Feeding experiments, fertilizing, analyses (R. '92).

MICHIGAN — At Agricultural College. Potatoes, amount of seed, results from thirteen stations (B. '93).

MINNESOTA—At St. Anthony Park. Small fruits (B. 25). Foods for milch cows and for pigs (B. 26). Analyses of foods, dairy products and sugar beets (B. 27).

NEBRASKA — At Lincoln. Cost of farm crops (B. 29).

NORTH CAROLINA—At Raleigh. Practical stock feeding (B. 90). Weather and the moon (B. 90 *d*).

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OKLAHOMA—At Stillwater. Soil analyses (B. 5).

OREGON—At Corvallis. Potatoes, roots for feeding (B. 24). Codling moth, hop louse, gophers and moles (B. 25).

RHODE ISLAND—At Kingston. Capons (B. 20). Seaweeds (B. 21). Strawberries (B. 22).

SOUTH CAROLINA — At Fort Hill. Cotton seed (B. 8).

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TEXAS—At College Station. Soils of the prairies (B. 25). Agriculture (R. '92).

UTAH—At Logan. Garden and orchard irrigation (B. 20). Exclusive grain ration, night and day irrigation (B. 21).

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WEST VIRGINIA — At Morgantown. Potatoes, maize (B. 29). Sheep (S. B. 30).

WISCONSIN — At Madison. Cranberry diseases (B. 35).

CANADA — At Guelph. Bees and fruit (B. 81). Spraying (B. 87). Cheese making (B. 88). At Ottawa. Fattening swine (B. 15). Steer feeding (B. 16). Ladoga wheat (B. 18). Coffee (B. 31). Experiment farms (R. '92). At Toronto. Crops and live stock (B. 44).

JAPAN—At Tokio. Analyses of rice; Phosphate (B. 12).

UNITED STATES GOVERNMENT PUBLICATIONS.

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D. C. Report of the statistician; Condition of winter grain; Mowing lands and pastures; Progress of cotton-planting; Spring plowing; Changes in crop areas: Temperature and rainfall; Notes from reports of State agents; The cotton crop of India for 1892-93; European crop report; Transportation rates (S. R. 104). An agricultural survey of Wyoming (M. R. 7). Report on the boll-worm of cotton (E. B. 29). Experiment Station Record (7 V): Editorial notes, — Recent compilations of analyses of feeding stuffs, buttermaking in Denmark, agricultural statistics as related to experimental work; Article,—The relation of the physical properties of the soil to the cultivation of plants, by Ewald Wollny; Abstracts of publications of the agricultural experiment stations in the United States, and of reports of foreign investigations. Insect Life (4 V), Periodical bulletin of the division of entomology, devoted to the economy and life-habits of insects, especially in their relations to agriculture. Monthly weather review; A summary of weather conditions observed throughout the United States. Letter to the Secretary of Agriculture regarding forest growth and timber consumption, prepared by B. E. Fernow, chief of division of forestry. North American Fauna (7), The Death Valley expedition: A biological survey of parts of California, Nevada, Arizona and Utah—Part 2. Grasses of the Pacific slope, including Alaska and the adjacent islands. —Plates (50) and descriptions of the grasses of California, Oregon, Washington, and the Northwestern coast, including Alaska (B.B. 13-2).

CATALOGUES ACKNOWLEDGED.

ALLIANCE CARRIAGE CO., Cincinnati, O.: Illustrated and descriptive catalogue of every imaginable style of vehicles, harnesses and saddles. "Honest work at honest prices," is the motto of this firm.

DEERE & COMPANY, Moline, Ill.: Illustrated catalogue of the "Largest Plow Factory in the World." This is a very handsome and artistic volume of over 300 pages, containing a vast amount of practical information of value to every buyer of implements.

FOOS MFG. CO., Springfield, O.: The World's Fair edition of the Scientific implements. A neat catalogue of the various mills, corn planters, harvesters, shellers, horse powers, and all the excellent machines manufactured by this well-known firm.

T. W. WOOD & SONS., Richmond, Va.: Descriptive circular and seasonable notes about summer crops.

A Fatal Disease in Pigs.

James Cass, California, writes us as follows: "About one year ago an eastern dealer bought a pair of Chester White and a pair of Poland China pigs. The former have not yet produced an increase, but the Poland China sow had, on the third of February last, brought forth ten very promising pigs. After a few days I noticed some scabs on their snouts and supposed they were caused by their biting each other. But as they grew older they began to sicken and die, and on close examination I found they were affected with some kind of malignant disease, which formed large round black scabs, dry on top. On the inside of the lower lip large lump of a hard matter formed, which I dug out in pieces the size of a common bean. Then the disease extended up to the right nostril. All the pigs were affected, and five died. Three of the males are not so badly affected. One has a large scar from the snout up into the nostril. The only female left has not grown to increase in weight one pound, since she was farrow, but the males have grown very nicely except one. The boar I imported has a scar on his snout extending to the nostril, showing conclusively that he had been affected with the same thing before he was shipped to me. The female purchased has no signs of scars on her. These four pigs cost me just $100, delivered here. All the boar pigs were engaged long before they were farrowed, and now I dare not deliver them, they having shown signs of disease in their blood. I have bred seven sows of common stock to the imported boar, and fear I shall find the same disease in the pigs, and what is the disease and the remedy, if there is one. If my other pigs, when they come, are affected in the same manner, I shall be a heavy looser. I have shipped these two pairs of pigs out here for the purpose of introducing an improved stock of hogs into this vicinity, as we are in a strictly dairy region and good hogs are in demand."

This letter was submitted to Dr. D. E. Salmon, chief of the Bureau of Animal Industry, U. S. Department of Agriculture, who replies as follows: "In reply to your letter I would say that the disease in swine, described by your correspondent, has not come under the observation of the Bureau, and the only suggestion I can make regarding the treatment is that a deep incision be made through the necrotic part, the diseased tissue scraped out and the cavity treated with nitrate of silver, or a 10 to 20 per cent. solution of chloride of zinc. After this the wound should be washed daily with a two per cent. solution of creolin."

American Southdown Record.—The compilation of pedigrees for this fourth volume of the American Southdown Record was commenced by the late Phil M. Springer, who had edited the previous volumes. Since his death on May 24, 1891, the work has been completed by other hands who have followed the same careful methods. The volume contains 2,000 pedigrees, numbered from 3,001 to 5,000, lists of transfers, owners and breeders. The index of animals includes all sheep that have been recorded, or named, in the four volumes of the Record. Southdown sheep still take the lead in the production of mutton, and there is an increasing demand for this meat. The price of the volume to members is $2.50, but to all others is $5. S. E. Prather, Springfield, Ill., is the Secretary.

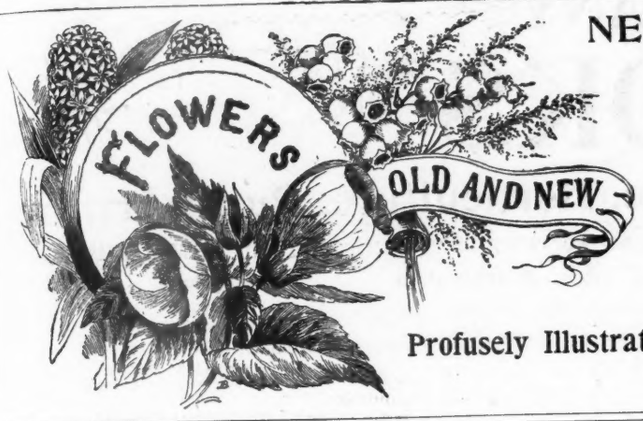
The Interest in Beet Sugar is increasing in the West, and if all uncertainties as to bounty or tariff are settled at the approaching special session of Congress so that capital may have confidence in the prospect for a series of years, a large number of beet sugar factories should be established in time to work up the '94 crops of beets. The AMERICAN AGRICULTURIST is constantly in receipt of letters from farmers, merchants and others, in localities that are ready to offer liberal inducements to secure the erection of a beet sugar factory to work up their crop. This industry is specially attractive to sections distant from market or that have heretofore been devoted mainly to give one staple like wheat or corn. In a great number of places in the West, Northwest and Pacific Coast States, and also at a few points in the Central South, beets are being grown this year for the second, third or fifth season, to ascertain the average quality and yield that may be depended upon, as well as to learn how to grow the crop. This is necessary to demonstrate the adaptability of any section to this crop, and the places where the best average results are obtained are the ones which will prove most attractive for sugar factories. The AMERICAN AGRICULTURIST desires to compile a complete list of the places that are making such practical tests in sugar beet culture and that are desirous of securing a beet sugar factory, with the address of some person or chairman of a committee in each place, who may be applied to for further particulars. This list will be published free of cost for our subscribers, and will prove of great value in showing the extent of the interest in beet sugar, and in enabling those interested to communicate with each other. If this proposition is liberally responded to, it should make an impressive exhibit.

Governmental Distribution of Seeds of Novelties.—The United States Department of Agriculture, notwithstanding the great demand by the constituents of congressmen for free seeds of standard kinds, still continues to introduce to all portions of the nation, promising new plants and varieties, to be grown by careful, intelligent farmers who will report the results. Staple seeds should not be donated, but Congress has decreed that they shall be, and the new Secretary of Agriculture is purchasing in the open market, seeds grown in the United States, the quality of the seed and the price being the only questions considered. Secretary J. Sterling Morton says: "To get the best seeds for the least money, is the object I have in view, and to this end, I invite the widest competition on the part of seedsmen the world over. I trust that growers of the best seed of all plants available for American agriculture, in whatever part of the world they may be, will seek to supply us, as a special clause in the bill provides that plants, trees, shrubs, seed cane, and seeds imported by the Department of Agriculture shall be admitted free of duty. If the Government is going to continue in the business of seed distribution, however, I cannot see why it should not go a step further than now, and grow the seed itself." And why should not the seeds thus multiplied be those which the Experiment Stations have improved, or, at least, have tested and found worthy of introduction?

Insects on Melons, Etc.—George P. Tippenhaner, Campbell Co., Ky.: The small black insects that destroyed all of your melon and cucumber vines may have been some species of plant louse, as you suggest, or they may have been one of the flea beetles. If they appear this season, try dusting the vines freely with tobacco, and if this does not check them, try dry soot, if you can get it; if not, mix carbolic acid and plaster, using only enough of the acid to make the plaster smell pretty strong, and then dust this over the vines. Spirits of turpentine, mixed with plaster, will sometimes answer the purpose equally as well as the acid. If the insects eat holes in the leaves, then you may conclude that they are neither lice nor bugs, but beetles, for the latter have mandibles, or jaws, with which they bite and chew their food, while lice, and the larger bugs, like the common squash bug, puncture the leaves and suck out their juices. For the biting insects, like the beetles, apply Paris green or London purple, being very careful not to apply enough to burn the leaves of the plants. If you will send us specimens of the insects, by mail, enclosed in a quill, we will tell you to what order it belongs.

Water-Proof Boots.—J. White, Elkhart Co., Ind.: Leather boots, shoes, or harness may be kept pliable, soft and water-proof, by the use of the following preparation. To one ounce of pure India-rubber, cut into fine pieces, and dissolved in just enough naptha as will make a thick fluid. Then add a pint of linseed oil, or neat's-foot oil. This should be rubbed into the boots or shoes when cleaned after wearing, and set aside for use. Two pairs of boots or shoes, by daily changing, will last longer and be kept in better condition, than three pairs worn continuously.

Country Telephones.—F. B. Lindsay, Nicholas Co., Ky: The original patents for a telephone have some years yet to run before they will become public property, besides there have been numbers of additional patents on improvements in the instruments, and these are of later date; consequently, the protected and perfected system will be carried forward well into the next century.



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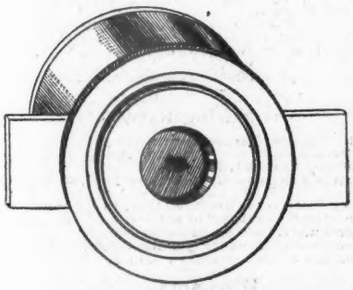

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